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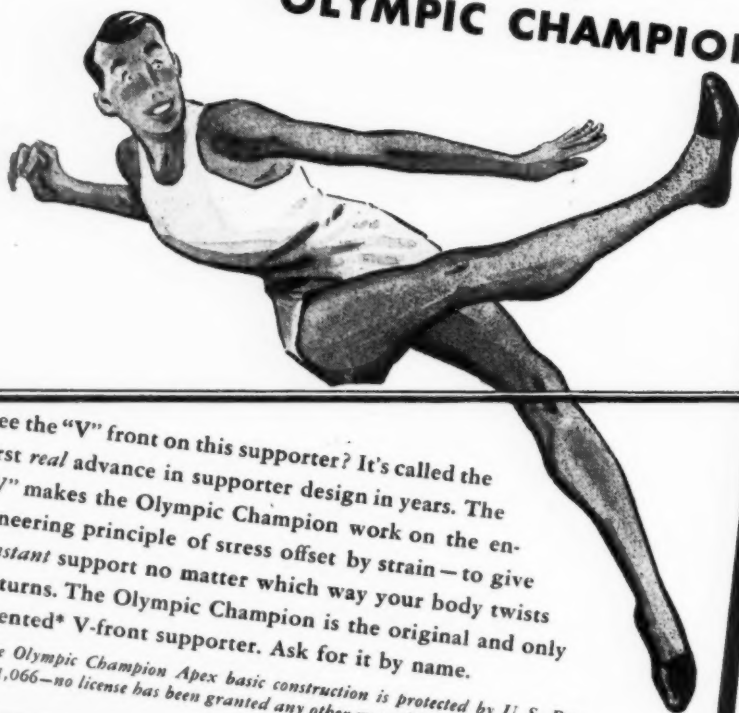
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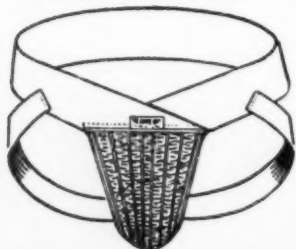


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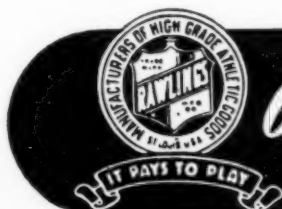
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Into the wild blue yonder

ANYBODY who thinks pole vaulting is just a matter of sticking a long bamboo rod into the ground and catapulting into the wild blue yonder is a crassly unscientific person who probably doesn't believe in vitamin pills, television and Orson Welles.

Pole vaulting ain't simple any more. Since the Seftons and the Warmerdams started dropping in on the angels, the once innocent little pastime has become as complicated as the formula for atom bombs.

To slither over a bar 14 feet above the ground, you now gotta be scientific. You gotta know all about cosines, inside velocity, parabolas, compression forces, and muscular viscosity.

What's that? No, we haven't been hearing funny noises lately. We're just reeling under the impact of a three-hour exposure to Dick Ganslen.

You track coaches should recognize the name. If you don't, turn to his article on page 24 and you'll find out all about him. One of the great vaulters of our time, Dick is now teaching anatomy and physiology at Rutgers University. On Saturday nights, you can find him floating through the air at the big indoor meets.

ATALL, lean, intense young prof, Dick is the Curie of the pole vault. He is constantly working on the anatomy, physiology, physics, and mechanics of the event. He probably has accumulated more scientific information on the vault than any researcher in captivity.

The other day he descended on us laden with graphs, formulas and silhouette charts. He laid 'em out on our desk and off he soared into the stratosphere. Some of it was 15 ft. 7¾ in. over our head, but all of it was curiously engrossing.

Dick's approach is purely scientific. From motion picture studies of the great vaulters, he's developed a series of charts which reduce the art into scientific formulas. He's analyzed every minute body move-

ment so thoroughly that he can tell you exactly how and at what precise split-second each should be performed.

To prove a point, he'll dig out a hieroglyphic-smothered chart, jab a finger at some mystic trigonometric symbol, and proclaim: "Day missed that jump because his parabola was too vertical at this specific time interval."

PROFESSOR GANSLLEN knows all the great vaulters intimately, having competed against them, studied them, traveled with them on international junkets, and corresponded with them at great length.

He believes the success of Warmerdam and Meadows has been a boon to the event in that it has stimulated spectator interest and encouraged many boys into trying it. But, at the same time, it has given many vaulters a false conception of the proper mechanics.

Both Warmerdam and Meadows relied on unusual speed and high hand grips. Our schoolboy athletes now think that's the secret of high flying.

Professor Ganslen begs to differ. Mechanics (form) comes first, he maintains. Vaulters should devote their early years to mastering the fundamentals. They should try to obtain the maximum efficiency with a *minimum* usable hand grip. Once the basic principles are mastered, then the hand grip may be moved up.

Ganslen's pet bamboo pilot, we gathered, was Bill Sefton, who, along with Meadows, held the world's record before Warmerdam started skimming the clouds.

Sefton cleared 14 ft. 11 in. with a hand grip of 12 ft. 8 in. Warmerdam vaulted over 15 ft. with a hand grip 15 in. higher than Sefton's. This, declared Ganslen, proves that Sefton had mastered certain fundamentals better than Warmerdam.

When we asked why Sefton never achieved the heights that Warmerdam did, Ganslen told us that Sefton was heavier than Corny, not as fast

and just didn't have the interest in the event he might have.

Ganslen himself has cleared 14 ft. 5¾ in. with a 12 ft. 10 in. grip on the pole. He pointed out that one of the advantages of a lower hand grip is that you don't have to run as fast.

ANOTHER point on which the vaulting Curie is fanatic in the position of the hands on the pull-up.

"They should be close together," he declares. "Otherwise you lose a lot of efficiency. Yet most of our vaulters keep them apart. Take any sequence of Meadows, for instance, and I'll bet you'll find his hands a couple of inches apart."

So we started digging through our picture files. We disinterred sequences of Meadows, Brown, Warmerdam, and Day. Sure enough every one of them had his hands clearly apart.

Ganslen shook his head triumphantly. "See what I mean? I'll make another bet with you. . . ."

"Sssh," we interpolated. "Wanna get your license revoked?"

Ganslen swept on, "I'll bet you'll never find my hands apart in any pictures you have of me." We looked—he was right. In all the pictures we had of him, his hands were closer together than John L. Lewis' eyebrows.

HAVING scaled the bar, verbally, over 15 ft., we naturally wanted to know how much higher man could be expected to go.

Some years B.W. (Before Warmerdam), one of our famous college coaches put a ceiling of 14 ft. 11 in. on the vault. Man, woman or child would never soar over that ultimate, he averred, briskly brandishing a fist-full of statistics.

Ganslen, at the time, was readying himself for a leap into scientific research. Appearing before the board of experts at Springfield College, he was asked to present his reasons for going into research.

(Continued on page 59)

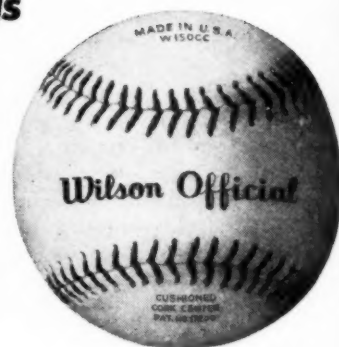
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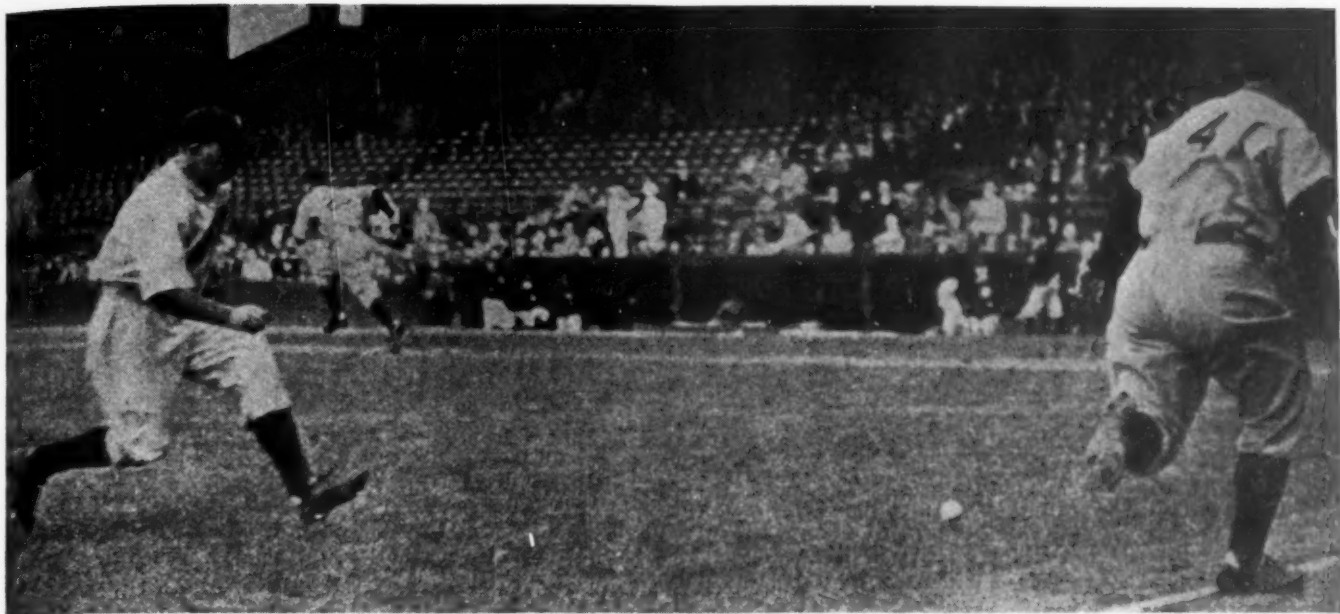
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IT'S TODAY IN SPORTS EQUIPMENT



BUNT DEFENSE

by MORRIS D. KAUFMAN

Morris D. Kaufman, of the Ellenville (N. Y.) Public Schools, has eight years of baseball coaching behind him—five at Mountaindale High and three at Warwick High, both in New York.

DESPITE its vital role on defense, the fielding of bunts remains one of the most neglected arts in baseball. Think of all the rallies that have suddenly burgeoned or been kept alive by the messy handling of bunts.

Why is it that despite the frequency of bunts and despite the fact that they're usually telegraphed, our schoolboy infielders continually mess up the play?

The answer is two-fold; first, many coaches possess only a hazy knowledge of how to cope with the various bunt situations, and, second, the players are not given enough preparation on them. The boys just don't know *where* to play and *how* to make the play.

Since the set-up is usually obvious and since bunting against a smart pitcher is no sinecure, the advantage should lie with the defense.

A bunt is used for two purposes: one, purely as a sacrifice to advance a runner; and, two, to put a man on base. The latter type bunt is known as the push or drag bunt, the idea being to tap the ball just out of the reach of the infielders.

Before detailing the specific assignments of each of the infielders, the writer would like to offer a picture of the general set-up in the common bunt situations.

With a man on first and a bunt coming up, the first baseman holds the runner close; the second baseman plays about midway between first and second, a bit behind the center of the base-path; the shortstop moves a little closer to second; and the third baseman sets up about five or six feet inside the base-line.

With men on first and second, and a bunt expected, the first baseman

comes in to the edge of the grass, while the shortstop plays close to the bag to freeze the runner. The idea, of course, is to force the runner at third.

Now for the individual defensive assignments:

The catcher must be trained to watch instinctively the batter's feet and hands. If the batter gives his intention away, the catcher should send a prearranged signal out to the infielders so that they can "lay" for the bunt.

The catcher should go out for the bunt, unless there is a play at the plate. If the ball is laid down properly, he won't have any chance to field it. Many balls, however, are topped or tapped too lightly, putting them within range of the catcher.

The catcher should field the ball, wherever possible, from its left (third base) side. The legs should be comfortably spread in the direction of the roll, with the feet at right angles to its path.

The catcher may jump into this position and pick up the ball by

bringing his hands together with a sweeping movement through the same plane of the roll. While as a rule, both hands should be used to scoop up the ball, sometimes it is more advisable to make the play with the bare hand.

Calling the play is a vital function of the catcher on bunts fielded by the pitcher, first baseman or third baseman. Since the player coming in has his back to the infield, it is up to the catcher to tell him where to throw. If no play can be made, the catcher should call "No play!"

Two other points for the catcher: When the batter lays one down with a man on first, the catcher should be on the alert to cover third if the third baseman is drawn in deep for the bunt. Otherwise an alert runner may dash all the way around to third.

The second point covers squeeze plays. When a squeeze is suspected, the catcher should call for a pitchout. The same holds true for hit-and-runs and steals. Since the runner starts with the pitch on all these plays, a pitchout should catch him cold.

What about bunts? Again the pitchout is an effective weapon. Most schoolboy runners will go down with the pitch. Hence, a waste pitch and quick throw will catch them cold.

But there are runners who are coached to wait until ball meets bat before going down. A pitchout, in these cases, may merely wind up as an extra ball on the batter. However, a quick peg to the base may often pick off the runner coming back.

The pitcher is the key man on defense, controlling about 60% of the defensive activities. One of the best

defenses against the bunt is to keep the pitch high so that the batter will frequently pop it up—right into double plays.

Another thing the pitcher must learn is to hold the runners as close to the base as possible. The following trick has been used successfully by several schoolboy pitchers:

With a runner on first, the pitcher takes his usual stand off the rubber for the sign from the catcher. He then tosses to first in an attempt to catch the runner. After the throw, he takes several steps toward first to meet the return throw. He receives the ball from the first baseman, turns and takes one or two steps back to the rubber.

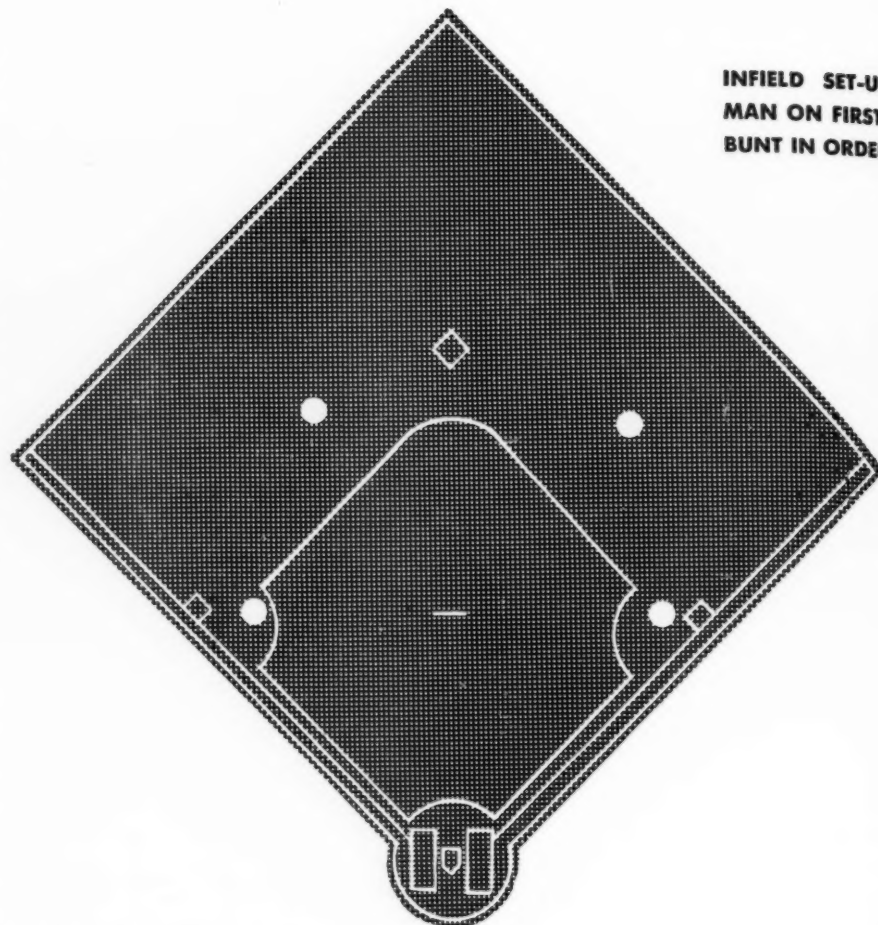
Suddenly he whirls back to first and snaps the ball to the baseman. If the runner is one of those daredevils who, eager to accept the pitcher's challenge, tries to take even more of a lead as soon as the pitcher's back is turned—he will be caught flat-footed.

The well-coached runner, of course, will never stray off a base until the pitcher takes the rubber.

A good follow-through is essential on every pitch. The pitcher should finish up with his feet and body set so that he can move to either side or forward with the hit.

When playing bunts used to squeeze the runner in from third, the pitcher should make his throw home low and fast so that the catcher can instantly put the ball on the slider.

On drag bunts to first, the pitcher should race over to the bag immediately in case the first baseman is drawn off.



INFIELD SET-UP
MAN ON FIRST,
BUNT IN ORDER

diately in case the first baseman is drawn off.

First baseman. With a runner on first and a bunt in the offing, the primary duty of the first baseman is to hold the runner close to the bag. As the ball is pitched, he should immediately run in toward the hitter.

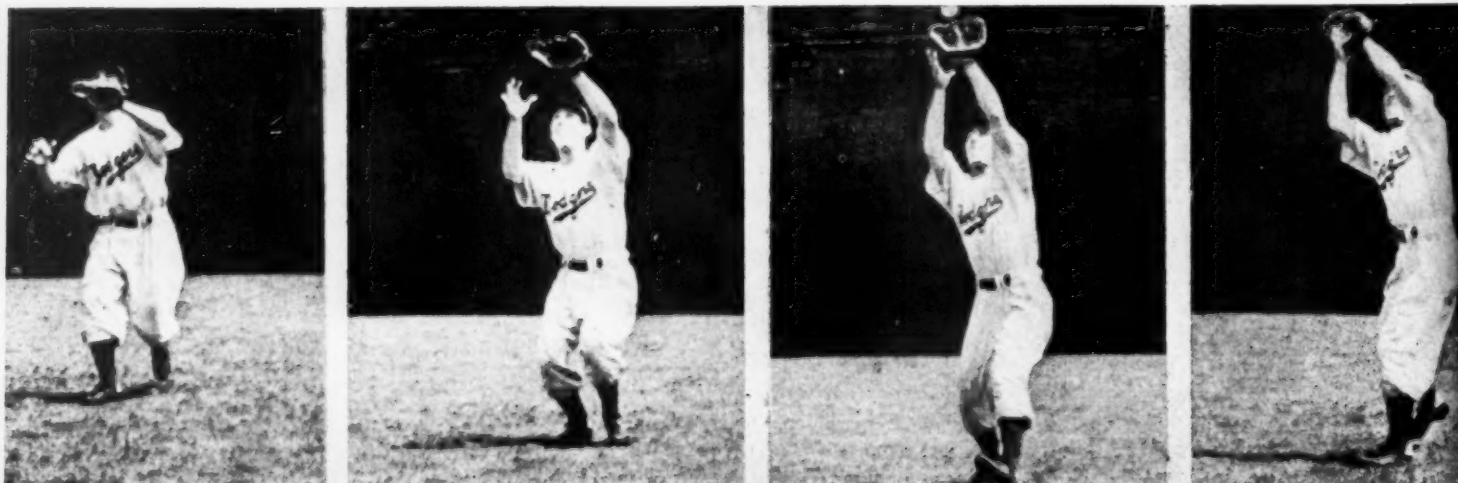
If the ball is bunted hard, the baseman may make his play to second. The slow bunt should be played to first. When in doubt, the baseman should listen for the catcher's call.

On bunts along the foul line which are likely to be beat out, the baseman should permit the ball to roll in the hope it will go foul. If it does, the baseman should immediately pick it up or brush it into foul territory. Otherwise it might roll fair again.

It shouldn't be necessary to say that with men running the bases, a baseman shouldn't stand around waiting for a bunt to roll foul, unless there is a good chance of it do-

PETE REISER, the noblest Dodger of them all, demonstrates the big-league manner of catching a fly ball and making a throw. First he gets in front of the ball (No. 1). As he reaches up for the catch (No. 2), he starts swinging his left leg forward (No. 3). He pulls the ball down in Nos. 4-6, at the same time hopping forward (back leg-front leg) to generate power behind the throw. There is no time-consuming wind-ups or body adjustments. Reiser is in perfect balance and executes the catch and throw in one smooth motion. He releases the ball with a full overhand motion, following through to ease the strain on his arms. All throws from the outfield should be made in this manner. The overhand throw is the fastest, truest, easiest method of release.

(From Ethan Allen's film-strip series on baseball distributed by Curriculum Films)



ing so. All this holds equally true with the third baseman.

Second baseman and shortstop. While the keystone pair rarely participate in the actual fielding of the bunt, they still play an active role in the defensive set-up.

When a sacrifice bunt is clearly indicated, the second baseman comes into the middle of the base-path about halfway between first and second. This enables him to cover first when the first baseman dashes in for the bunt.

With first and second occupied, or with a man just on second, the shortstop plays very close to the bag in order to freeze the runner. In both these situations, the idea is to get the runner going to third.

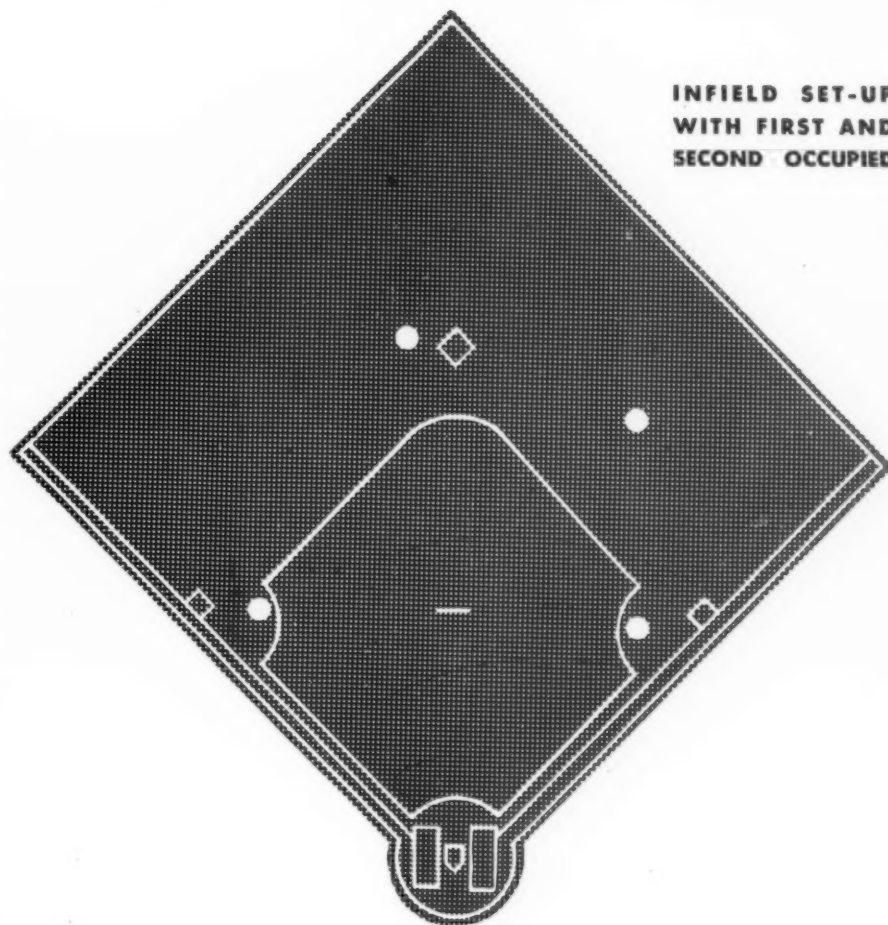
The third baseman has his work cut out for him on bunt plays. He should always study the batter for tip-offs. Many bunters give themselves away by lifting their little fingers or turning too soon toward the pitcher. Upon perceiving these tip-offs, the third baseman should break in immediately.

If the bunt is hit hard, the baseman should field it with two hands. If it is hit slowly, the play should be made with one hand. The baseman shouldn't stop after picking the ball up. He should keep moving and throw with an underhand motion.

With a runner on first, the third baseman should charge in as soon as the bunter commits himself. If there is a good chance of forcing the runner at second, he should throw to that base. If not, he should throw to first.

Whatever his choice, he should return to the bag immediately after his throw.

With men on first and second, and a bunt coming up, the third baseman has a tough job to perform. As a rule, the play is for the force at third. The pitcher and the first basemen are usually charged with the fielding of the bunt. But they often



INFIELD SET-UP
WITH FIRST AND
SECOND OCCUPIED

cannot make the play. It is then up to the third baseman to field the ball and make the throw.

The play calls for good judgment, especially in determining the speed of the ball. Here is the way Charlie Dressen, the new Yankee coach, used to make the play when he was third-basing in the big time.

He took a position about three steps in from the base-line, just inside the bag. He kept a mental picture of the bag in mind so he could back into it without looking, if necessary. Hence, if the pitcher could make the play, Dressen could get back to the bag in a moment. If the pitcher couldn't make the play, Dressen was ready to dash in immediately.

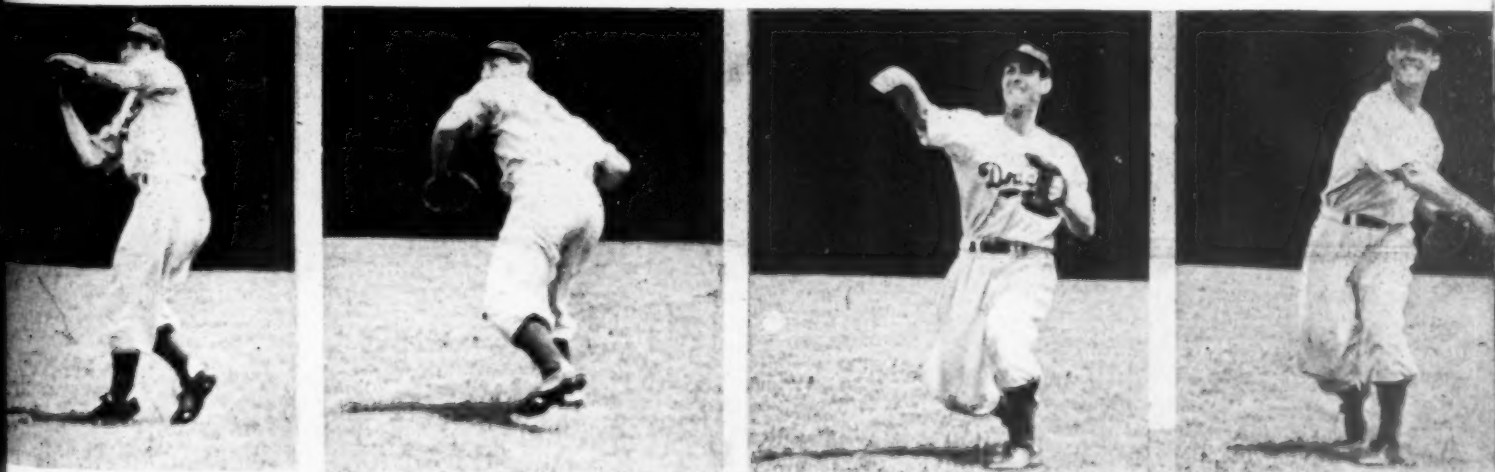
Here's another smart play in this

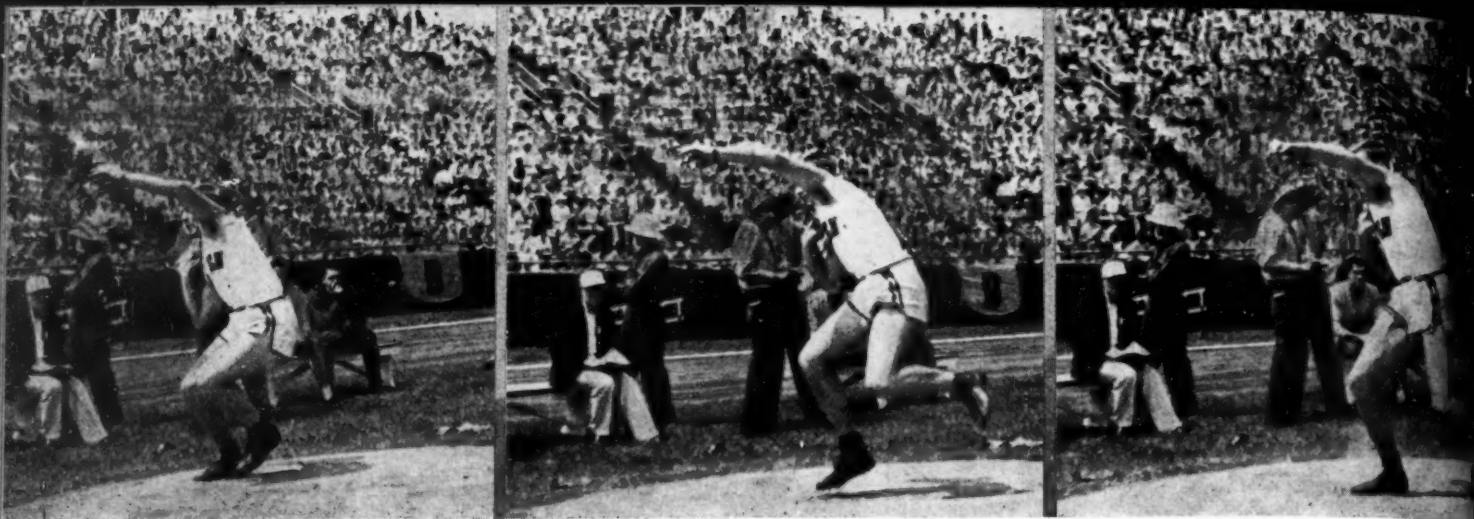
situation: If the bunter is slow getting away from the plate, the third baseman may fire the ball directly to second. The ball may then be relayed to first for an easy double play.

This is a particularly good option with a slow, right-handed hitter up. Too many schoolboys are so sure the play will be made to first or third, and concentrate so hard on laying the ball down, that they are very slow getting off to first.

Even if the third baseman gets only the man going to second, the play still represents a good risk. With men on first and third, there is still a chance for two.

With two strikes on the batter, the third baseman should move back to his normal position.





Specialized Exercises for Track

by EDWARD PECK, JR.

HOW many times have you seen a runner far out in front suddenly break stride, lose speed and then start limping helplessly as the rest of the field races by?

That's the usual story of a pulled muscle, and if you dig into its case history you'll usually find a sorry neglect of the proper warm-up and body-building exercises.

The tragedy of such injuries is that they can be so easily prevented. All you need is a good training program.

Because of the nature of the various events, different types of exercises are required. The events may be separated into three groups, as follows:

1. Events based primarily on endurance, such as distance and middle-distance running.
2. Events which depend on specialized skills—jumping, vaulting and weights.
3. Events which require explosive force, as the sprints.

It stands to reason that the exercises for the pole vaulter should differ from those of the hurdler. The former requires exercises which strengthen the muscles of the arms and shoulders, while the latter requires activities which stress suppleness of leg and thigh muscles.

About 15 minutes, or approximately a third of the workout, should be devoted to exercise. During the competitive season, this time should be reduced. The graduation principle also holds true for the exercise period during the week. The heaviest work should be done the first three days of the week.

In general, the exercises aim at strengthening the entire body, with emphasis on the legs. Some exer-

cises, such as leg flexing and trunk raising, are beneficial to all trackmen. But these general exercises will be left to another article.

The purpose here is to dwell on specialized exercises for each event. Since all the exercises deal with the strengthening of the legs, some naturally will over-lap. It will also be noted that some exercises, such as push-ups and pull-ups, are not described in full. This wasn't deemed necessary since every coach and athlete is familiar with them.

Those exercises which are not familiar to the majority of athletes are described step by step. The athlete should learn them in the given sequence (1-2-3-etc.) to assure the best results.

HURDLES

The aim of the hurdling exercises is the development of the suppleness in the hips, legs and thighs required in clearing the hurdle.

Spreading exercise or ground hurdling

(1) Sit on ground with leading leg extended straight out and toes pointed up. Place other leg out to side in clearance position.

(2) Extend arm opposite leading leg, palm down, and extend other arm backward.

(3) Now dip body forward from waist as far as possible.

Working the hurdling leg

(1) Stand on leading leg and work opposite leg over a real or imaginary hurdle.

(2) Combine arm thrust and body tuck (forward trunk bend) with working of leg.

Exercise using the hurdle

(1) Stand on leading leg at side of hurdle.

A track man and journalism student at the University of Wisconsin, Edward Peck, Jr., has panned these nuggets from an interview with the famous Badger coach, Tom Jones.

(2) Place opposite knee on top of hurdle, forming two right angles as in clearance.

(3) Then dip trunk forward and at same time touch ground with hands.

Back-stretching and hamstring exercises are also beneficial to the hurdler.

BROAD JUMP

The muscles used most in broad jumping are located in the legs, namely the triceps and hamstrings, and in the trunk.

Jogging

(1) Jog on ball of feet with emphasis on action of ankle.

Knee bends

(1) Stand with hands on hips and heels close together.

(2) Bend knees and drop into full squat with back straight and arms extended forward.

(3) Return to standing position.

Front bend

(1) Stand with heels together and hands on hips.

(2) Bend trunk forward from waist, touching palms to ground, keeping knees straight.

SPRINTERS

Exercises for the sprinter fall into the torso-building class.

Jogging

(1) The sprinter does his warm-up jogging in the same fashion as the broad jumper, with emphasis on ankle action.

Bicycle-pedaling

(1) Lie on ground on back. As-

(Continued on page 62)

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SHOT PUTTING

USING these pictures as a text, the shot may be projected to young athletes as follows: Carry the shot well up in the fingers, tilting the wrist back and spreading the fingers behind the ball.

The first, second and third fingers are directly back of the shot and furnish most of the push. The thumb on one side and the little finger on the other help prevent the ball from slipping out.

Now bring the ball to rest against the neck on the right shoulder. Keep the elbow out, on line with the shoulder. Place the right foot at the back edge of the circle at right angles to the direction of the throw. Place the other foot a few inches forward at about a 45° angle. Extend the left arm forward and up for balance.

Relax, keeping the weight on the back foot. Drop the right shoulder slightly, bend the right knee a bit and keep the head up. Before making the hop, raise the left leg and take about three preliminary forward and backward swings for balance.

Then kick the left foot straight out. At the same time, take a hop on the right foot. Glide, rather than jump, keeping the right foot close to the ground. Try to land with the right foot near the center of the circle. Let the left foot come down a few inches from the toeboard.

On the hop, twist slightly to the right, drop the right shoulder a little more, and swing the left arm across the face, with elbow bent. Land with the weight on the bent right leg.

Now drive from the right leg and twist the right shoulder and trunk to the left. Thrust the putting arm up and forward, and push with the right leg. Push the ball up and away.

At the same time, swing the left elbow to the left and back. All these movements should be comparatively relaxed. Now for the one final explosive effort on the release—a strong snap of the wrist and fingers. The idea is to put the weight behind and under the shot. The force flows through the legs, hips, shoulder and arm in that order—in one coordinated movement.

To stay in the circle, you must reverse the feet. Do this after the release. Let the right foot come forward against the toeboard and swing the left foot speedily back and up.

Remember, get that shoulder behind the throw. Otherwise you'll throw the arm out. Make the whole action a smooth, graceful movement, and distance will take care of itself.



Simplified Tennis Strategy

by CLYDE C. PARKER

WHAT is the high school or college tennis player to do with the strokes he has learned to execute fairly effectively?

The answer is—place them where they will do the most good. That spells s-t-r-a-t-e-g-y.

Complex strategy is not essential. A simple set of fundamentals, easily remembered, will enable the novice to judiciously select the right shot for each situation.

The accompanying illustration may be used to demonstrate the target points for their shots.

Strategy for the singles game will be considered first. There are five critical points to keep in mind once the opposing server has completed his shot. They are A, B, C, F, and G.

Points A and B are backcourt corner spots, while C is right in the middle of the backline. Points F and G are drop shots just over the net.

Points A and B are used to put the opponent on the run. This enables the stroker to make a placement or to force the opponent into stretching and thus hitting an ineffective shot. These points may also be used for forcing shots which can be followed to the net.

Many players overlook the advantage of Point C. Since C is in the center of the backcourt, they seem to think it is a poor spot to aim at.

This definitely is a misconception. By spotting the ball on C, the stroker forces the opponent to stay in the center of the backcourt. This is a tough spot from which to try a passing shot.

If the attacker takes the net behind a good, strong drive to C, the opponent must make either an exceptionally good angle shot to pass him or must lob over him. The attacker must be sure to take the net only behind strong drives.

Points F and G may be exploited by players with dependable drop shots. They are perfect places to hit to after putting the opponent on the run back and forth across the backcourt.

At times, of course, the opponent will, through speed of foot or through an error in judgment by the attacker, reach the drop shots and make things embarrassing for the stroker.

But even if he does reach the ball, the opponent often is handcuffed by them. At best he can only send back an ineffectual shot. He

may then be easily passed by the attacker.

For the consideration of the service attack, six points on the backline are connoted (D, H, I, J, K, and E).

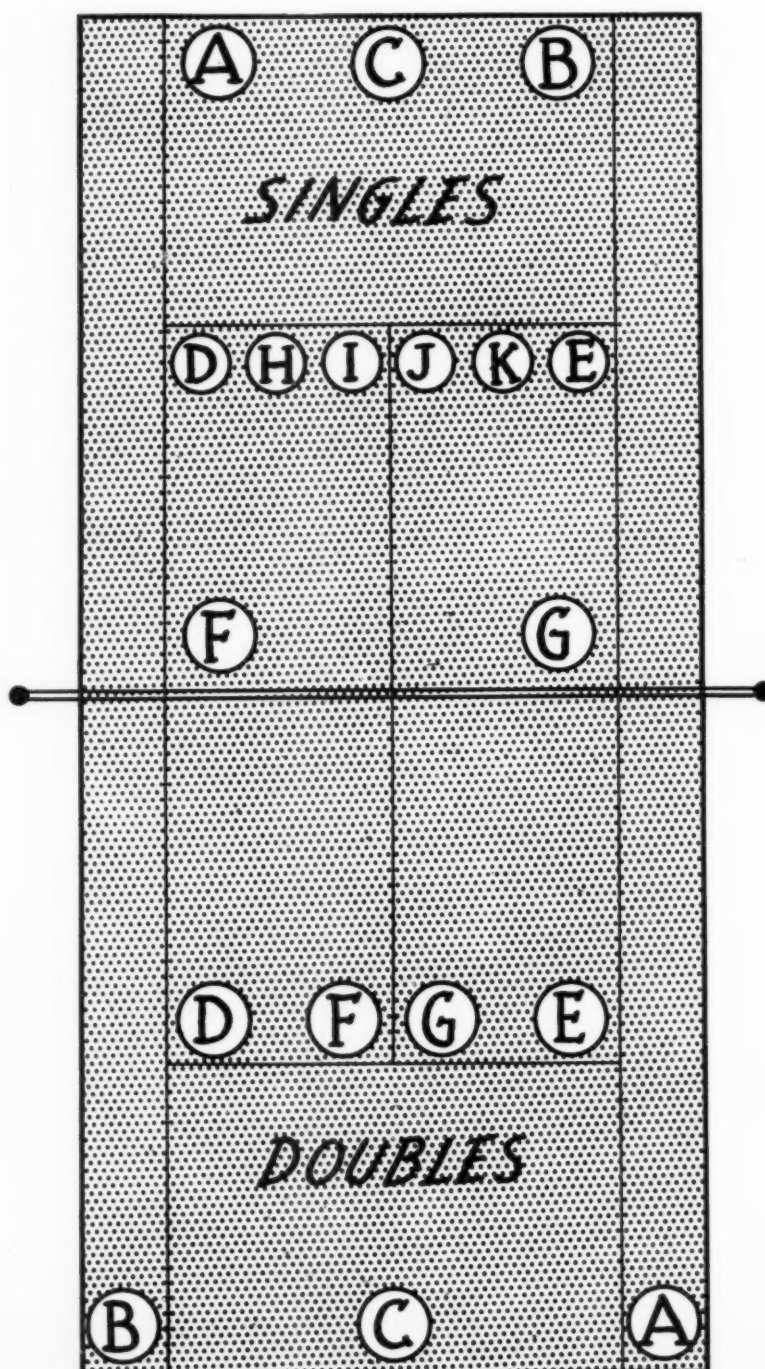
Points D and E are useful for pulling the receiver out of position. If the server isn't careful, however, points D and E can be excellent positions from which the receiver can return the service with forehand or backhand drives right by the server.

Clyde C. Parker is tennis coach at Bowling Green (Ohio) State University.

Swift, straight serves at Points H and K are not easy to return with any degree of aggressiveness.

These serves must be swift, the idea being to crowd the opponent's strokes and prevent him from hitting the ball with a full, unhindered swing. Points I and J are for placement serves only.

(Concluded on page 46)



Tag-Out

WHITEY KUROWSKI, St. Louis Cardinal third baseman, offers an object lesson on covering the bag and making the tag.

From the position of Whitey's feet, we may assume that the throw has come from directly behind the runner—the body is always turned in the direction of the throw.

The legs straddle the base with the feet close against it. Many beginners err by taking a position too deep in foul territory or by spreading the legs, exposing the feet to flying spikes.

Whitney crouches comfortably with his back almost parallel to the ground and his eyes trained on the runner's feet. Upon receiving the throw, he grips the ball securely in his glove and drops it over the center of the bag.

The idea is to let the runner tag himself out. Note how the slider does this. Despite his nice hook, he cannot avoid the ball.

Beginners who like to make the tag with both hands should be advised to keep the bare hand away from the play, as protection against spike injuries.

High Catch

AARON ROBINSON, the Yankee rookie who established himself as the best catcher in baseball last season, shows how to handle a high inside pitch.

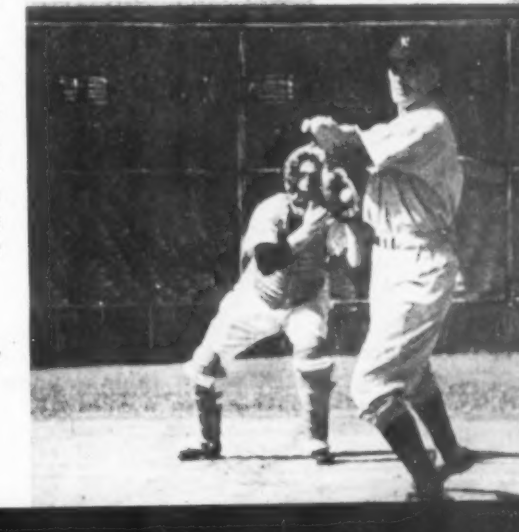
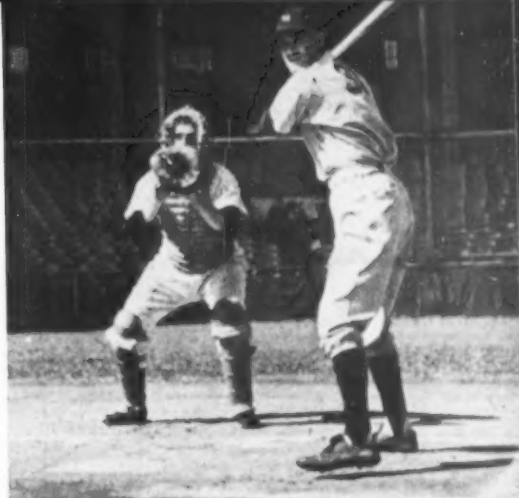
First note how he protects his bare hand when presenting the target. He keeps this member semi-clenched behind the mitt.

As the pitch comes inside, Robinson shifts his weight over without moving his feet. He makes the catch with the fingers of his mitt up.

For catches below the waist, he drops his glove so that the fingers point down.

On pitches which cannot be handled without undue stretching, the catcher should shift his feet. The pitch far inside should be met with a step-over of the left foot. The outside pitch should be handled with a step of the right foot. In short, the foot closest to the pitch does the shifting.

(From Ethan Allen's film-strip series on baseball, distributed by Curriculum Films.)



AUTOSUGGESTION!

A New Formula in Mental Conditioning

by JOHN M. HUBBARD

A NEW idea in the mental conditioning of athletes has made its appearance on the sports horizon—relatively unheralded, but already thoroughly and successfully tested.

Introduced at San Jose State College in 1942 by psychologist Dorothy H. Yates, Ph.D.—at the request of the college boxing coach—this new formula involves the use of a dynamic form of "autosuggestion", a term which laymen often confuse with self-hypnosis.

The pure form of autosuggestion is defined simply as the uncritical acceptance by a person of an idea proposed by himself.

The word "hypnosis" evokes wild visions of black magic, witches' brew, and evil deeds.

Erroneous as these visions are, and as conclusively as they have been disproved, an unfortunate and undeserved taint continues to cloud the real nature of hypnotism.

Dr. Yates, a nationally recognized consulting psychologist and professor at San Jose State College, was well aware of this formidable obstacle when she first tested her novel plan at the college. She went to great pains to show the student athletes, members of the San Jose boxing team, that their suspicions, if any, were groundless.

Their coach, DeWitt Portal, president of the Boxing Coaches Association of the N.C.A.A., and member of the Boxing Rules Committee, also appreciated the importance of mental conditioning.

ATHLETE'S REQUISITES

According to Portal, the prime requisites of an athlete are: (1) good physical condition, (2) knowledge of the skills combined with the ability to execute those skills, and (3) a proper mental attitude. Of these Portal considers the last most important.

While many coaches might not agree with him, every coach, like Mr. Portal, does try to develop a healthy, confident, "pointed-for-the-game" outlook.

Physical conditioning alone is not enough.

Coaches must whip their squads into shape mentally, as well as

physically. There is hardly a locker room in the country which does not have its quota of "Wallop Wabash" signs posted in conspicuous places. And there is hardly a coach who does not utilize a full and varied repertory of pre-game or dressing room pep talks.

However, while working for these constructive ends, the coach is obliged to wage a constant battle against the destructive force of excess nervous tension. Over-eagerness is as bad, if not worse, than indifference.

Athletes can "tie up" in the most crucial moments of a contest. Peerless Prep's glue-fingered end, in the clear for a touchdown pass, suddenly finds the glue has turned to butter as the ball slithers through his over-anxious hands. And Peerless loses a seemingly certain six points, and also the game. The history of sports is replete with these instances.

LOOK AT THE RECORD

Granted, then, that proper mental conditioning is a "must" in athletic success. The question arises: Can autosuggestion accomplish this task?

Let the record speak for itself. Back in the winter of 1941-42, near the end of the collegiate boxing season at San Jose, one of the members of the boxing team cornered Coach Portal in the dressing room.

"Dee," he confessed, "I love boxing. Yet, before every fight, I get such a terrible case of butterflies it takes all the enjoyment out of the sport for me.

"I've taken a few psychology courses with Dr. Yates, and she seems to have some good ideas. Do you think she might be able to help me?"

Portal said he didn't know, but that it certainly would be worth trying. At the time, he admits, he was dubious about the success of the venture.

This feeling did not last long. In the "butterfly stomach" boxer's next fight, after putting his case before Dr. Yates, he was so calm and confident, and scored such a decisive victory, that Portal blinked his eyes in disbelief.

Here is one of the most provocative articles that has ever appeared in *Scholastic Coach*—a new formula for mental conditioning, based on a dynamic form of autosuggestion. The author, John M. Hubbard, was an officer on board a destroyer during the war, and wrote this article in connection with a course in magazine writing he took at Stanford University last term, where he is a student under the G. I. Bill.

Soon after, the coach and the psychologist put their heads together. Her techniques had worked on one boxer, why not try them on the whole team? Both agreed that the experiment might yield very interesting results, from a psychological, as well as athletic, point of view.

Portal explained the idea to his boxers. The majority of them were only too willing to see if Dr. Yates could do for them what she had done for their teammate.

The psychologist, in the first and only group meeting of the 1941-42 boxing season, was given just one hour to work with the athletes before they boarded a train for Sacramento, where they were entered in the Pacific Coast Intercollegiate Tournament.

In that time, she was able to present just a preliminary introduction to her system of mental conditioning, yet even this hasty "psychologizing" produced amazing results.

MENTAL ATTITUDE

One of the athletes was a promising fighter named Charles Townsend.

All season, Townsend had been a source of disappointment to his coach, despite the fact that he boasted an undefeated record. Portal, watching the boy in the gym, knew he had tremendous potentialities, but wasn't realizing on them because of a bad mental attitude.

While loose and confident in the privacy of the gym, Townsend in actual combat, suffered severely from excess tension, so that his ring performance was but a fraction of what it might have been.

Before every bout, Portal tried talking to the boy in an attempt to relax him. All such efforts met with failure. On one occasion, while Townsend was sitting in his corner

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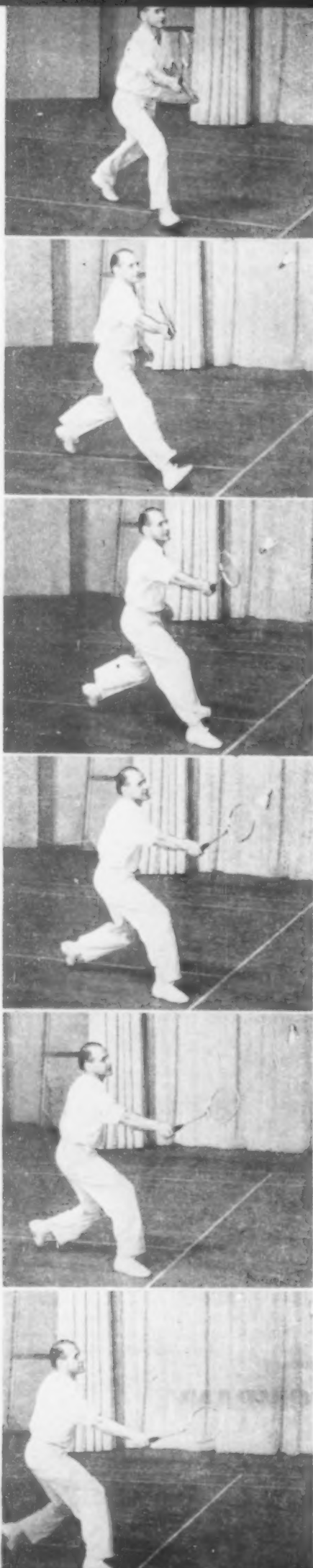
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awaiting the appearance of his opponent, Portal noticed that the athlete was not listening to his conversation.

Hoping to get Townsend's mind away from the impending fight, the coach reached out and pulled a hair from the boxer's chest. Townsend showed no reaction whatever. Portal then took a handful of hair between his fingers and jerked. Still no reaction. The fighter was so absorbed in his own thoughts, so tense, so nervous, that he felt no physical pain.

More serious evidence of excess tension can hardly be produced. And yet, this boy, after one short session with Dr. Yates, became a different fighter.

At Sacramento, before he entered the ring for his first elimination bout, Townsend remarked he had never felt so calm.

The truth of the statement was proved by his subsequent performance. Winning all his preliminary fights with the ease and mastery of his gym exhibitions, Townsend went into the finals, with the Pacific Coast collegiate title at stake.

In that championship bout, Townsend amazed everyone, including Portal. As boxing coaches know, one of the most difficult things a youthful fighter can be asked to do is to change tactics in the middle of a bout. And to ask the athlete not only to change his tactics, but to adopt new methods of attack, is asking the impossible.

Many professional ringmen are incapable of this on-the-spot adjustment. But Townsend accomplished it. His opponent offered a defensive problem that Townsend's orthodox offense could not solve. At the end of the first round, Portal outlined a new pattern of attack to him, and Townsend, mentally absorbing and physically utilizing this new pattern, scored a spectacular victory.

So spectacular, in fact, that Portal was actually accused of sponsoring a professional boxer in the person of Townsend!

The boy, aided immeasurably by Dr. Yates' psychological mental conditioning, thus captured the Pacific Coast title in his first year of intercollegiate boxing.

Cross-Court Placement

Although forehand shots in badminton are generally played off the left foot, it is often possible, as demonstrated here by Hugh Forgie, the famous internationalist, to make a placement with a short stroke off the right foot. Delaying the wrist action as long as possible adds greatly to the deception.

Townsend's case, alone, might serve as a convincing recommendation of the psychologist's idea, but the record does not end there, by any means.

Take the next season. Before the midway point had been reached, Coach Portal, along with Townsend and many other first-string members of the boxing team, entered the service. Yet Dr. Yates, working with a student coach and an almost completely novice team, again achieved convincing results.

With her help, State's ring team battled its way through an undefeated season against some very respectable opposition. Included on the schedule were two Army units, both numbering former Golden Glove and professional fighters among their representatives.

ADOPTED FOR TRACK

Lloyd C. "Bud" Winter, well-known track coach at the college, observing the success enjoyed by the boxing team, adopted Dr. Yates' plan for use with his athletes, and, like Portal, became enthusiastic about it.

Then Bud Winter entered the service, becoming, as Portal had become, an officer at a Navy Pre-Flight School. Winter was stationed at Del Monte, Cal., while Portal was at Athens, Ga.

The Navy's rigorous, exacting flight training course led Winter to believe Dr. Yates might be of great value in helping prospective aviators overcome the mental obstacles so common in such programs.

Knowing she had previously conducted some interesting tests with naval aviators, Winter invited her to hold a group demonstration—at Del Monte.

The outcome of this demonstration was eminently satisfactory. Captain Tom J. Hamilton, U. S. Navy, originator of the pre-flight training courses, was then in charge of the entire pre-flight school program. Just returned from a tour of the Pacific area, where he had observed at first hand the disastrous effects excess nervous tension could produce in naval aviation, Capt. Hamilton, now head football coach at Annapolis, was impressed.

Further demonstrations were held at Del Monte, and similar experiments were made elsewhere by other psychologists—culminating in the Navy's acceptance of psychological mental conditioning for use in its flight training program during the war.

(Continued on page 18)

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DOLCOROCK

(Continued from page 16)

Now that the war is over, and peacetime sports are coming back at San Jose State College, coaches Portal and Winter are anxious to again apply Dr. Yates' idea to college athletics.

As Portal declares, "While Dr. Yates cannot—as some people seem to think—make a Joe Louis out of a Casper Milquetoast, her plan for mental conditioning certainly can help an athlete perform at the highest peak of his physical capacities."

In that statement he makes an important qualification. This new idea involves nothing more than psychological common sense. It is, as previously explained, not based on anything reeking of the occult, and makes no use of "abacadabra" techniques.

Dr. Yates is in complete agreement with Portal on the qualification he makes, and she points out another—and equally vital—distinction. She emphasizes that her system is not akin to hypnosis in its classic form. The trances associated with hypnosis play no part in her plan.

NO UNCRITICAL ACCEPTANCE

There is no absolutely uncritical acceptance of a suggestion by the subject, and there is no automatic reaction to any suggestion. Hers is a dynamic form of the phenomenon, a kind of a "waking hypnosis," as she says. The subject must be active if he is to profit from her plan.

Using a psychologically sound procedure, Dr. Yates' formula follows essentially this pattern:

First, in preliminary discussion, the athlete must be convinced the plan can be of assistance to him. Examples of success in concrete situations, perhaps the ones contained in this article, are very helpful in achieving that end.

At the same time a non-technical description of the physical disturbances caused by nervous tension should also be given. Once the athlete appreciates the tremendous energy waste brought on by excess tension, the absolute necessity for relaxation will become clear.

Explanation of these detrimental physical disturbances might embrace the following points: When a person is in a state of tension his heart action speeds up—respiration quickens—adrenalin flows in increased quantity—digestion stops. All resources are funneled into the skeletal muscular system, so that the emergency which caused the

tension can be met with all the power possible.

Obviously this emergency-meeting bodily chain of events occurring before a sports contest wastes important energy, and sometimes leads to almost complete exhaustion. By the time the athlete actually needs to release his store of energy, it is seriously depleted and his actions are apt to be the jerky and uncoordinated sort which characterizes a "tied up" athlete.

THE CHOSEN WORD

Next, the athlete must be taught to relax—to rid himself of nervous tension. Dr. Yates tells her subjects to concentrate on a word of their own choice, such as "calm"—a word that signifies the exact opposite of tension. She explains that this chosen word will become the means for bringing back a state of relaxation in the future. Then she uses this word, and thoughts connected with it, in relaxing the subject.

The athlete lies on a couch or sits in a chair with a back high enough to support his head. He closes his eyes, and concentrates on the word he has selected as meaning the opposite of tension.

Dr. Yates talks to him slowly, reassuringly, asking him to picture in his mind a place of peace and tranquillity. She tells him to imagine he is there, to picture the calmness and contentment of the scene.

After about ten minutes of relaxation talk, Dr. Yates suggests that the athlete remain relaxed and quiet for awhile, letting the thoughts of calmness and peace sink in. She allows him to spend at least five minutes in reflection.

At the end of this period she dismisses the subject, directing him to fall asleep each night thinking of his relaxation word. By so doing he will be able more quickly to cement the relationship between his word and a calm mental attitude. It has been proven that simple material requiring no reasoning is better retained if it is brought to mind just before falling asleep.

Usually in a very short time—perhaps two or three discussion periods with the psychologist—the athlete is able to relax without her guidance merely by forming a mental association between his chosen word ("calm" for example) and a relaxed condition.

The athlete has thus formed a habit pattern, which he may use to calm himself before a sports contest, as Charles Townsend did before the fights which gave him the Pacific Coast title.

(Concluded on page 22)



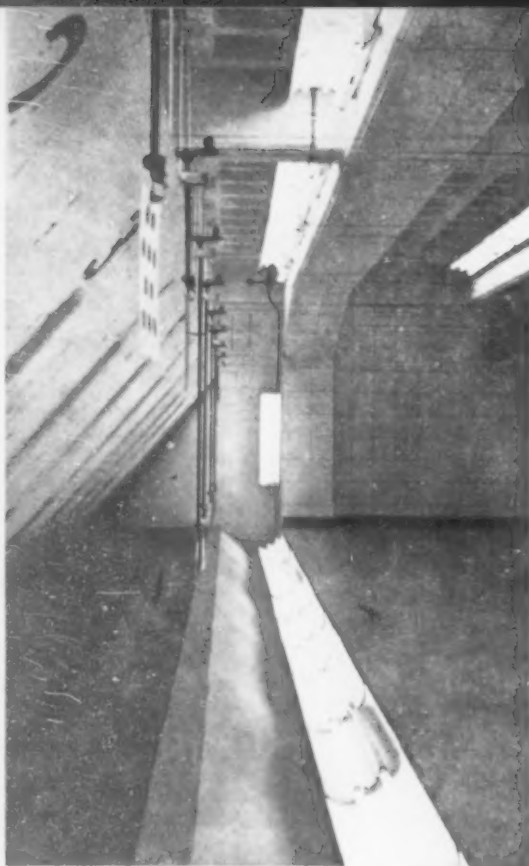
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Perspective view of bullet stop, showing fluorescent lighting, sand pits, carriers.

BODY fitness is as important to the rifleman as it is to any other athlete. But it is a different kind of fitness, requiring a different emphasis in the conditioning program.

The football or basketball coach trains his men for days to toughen their muscles, develop wind and build up stamina, then tapers off before the day of the game to allow them to rest—to give the body's energy manufacturing plant an opportunity to store up a reserve stock.

The coach wants his men to enter the game well-rested, with a great amount of energy stored up and awaiting release. He gives them a pre-game warmup to send them in "hot."

This warming up stirs the circulation and generates all those mysterious chemicals which needle our organs into faster action. The con-

Shooting Fitness

by TOM KIZER

testant becomes keyed up, "on edge," eager for the start.

The rifle coach wants—and works for—something entirely different. He wants his men to take the firing line relaxed and lazy; as cool and calm as is humanly possible.

He tries to suppress those excitable glands and their spirit-provoking drugs; he tries to slow down all the chemical functions of the body. He likes the heart action slow, slow, slow, and the breathing easy. The less sugar available for quick energy the better.

To achieve this end, he continues his training program right up to and including the day of the contest, with only a rest period of two or three hours before match time and no pre-game warm-up.

He wants his men tired, exhausted and as hungry as possible. Knowing they will score better on an empty stomach, he keeps them away from the candy counter and dextrose-rich soft drinks.

This is a herculean task for the high school coach, since most matches are scheduled after school hours when the boys are hungriest.

The game-day workout should be a long cross-country run, or a long tiring swim, not less than two hours before the match, with no violent exercise or exciting horseplay thereafter. For the general conditioning program (day by day) basketball, swimming and all running exercises which tend to develop good wind are favored.

Body-contact exercises are shunned because of the bruises and muscle stiffness they often cause. Excessive weight lifting, chinning, rope climbing and wrestling are also avoided as these tend to produce muscular tightness in the shoulders,

One of those wonderful veteran marksmen who can't do enough for high school youngsters, Tom Kizer of Lynbrook, N. Y., serves as volunteer generalissimo of the Nassau County Inter-scholastic Riflery League.

arms and back. These parts must be relaxed.

Why the emphasis on wind? Because breathing or, rather, the ability *not to breathe*, is important to the rifleman. Consider how he lets a shot off: While aiming, he holds his breath and, as his sights line up, squeezes his trigger gently, gently, gently, to prevent the slightest jerk.

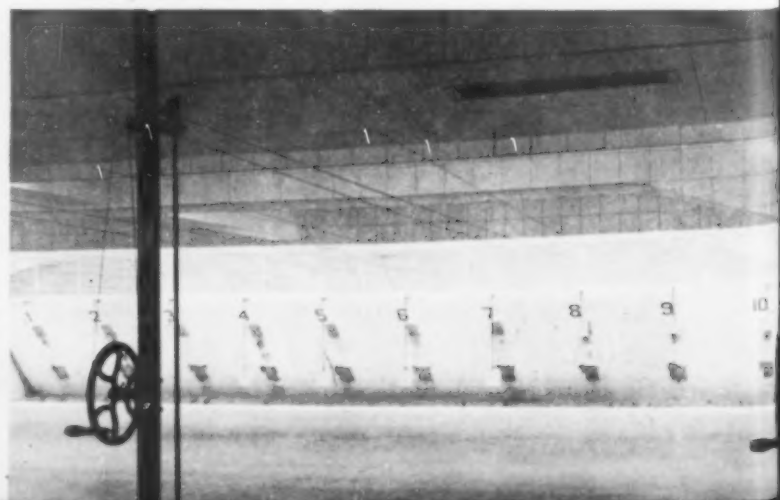
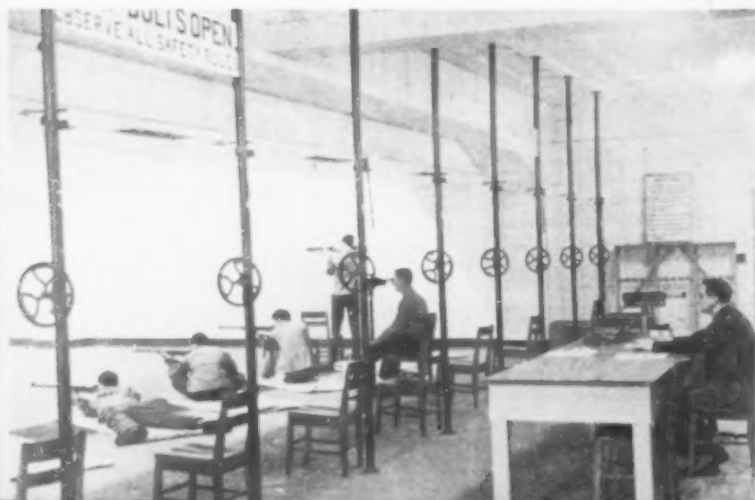
If his sights get out of exact alignment he arrests his squeeze and, still holding his breath, lines them up again and resumes that squeeze; just 1/100th of an ounce, then another 1/100th and another and another until the firing pin is released and the bullet is on its way to the ten ring.

A well-conditioned man, accustomed to deep breathing, which supplies his blood with lots of oxygen, has no trouble holding his breath during this patient, trigger-squeezing period.

Not so the short-winded fellow—the one who scoffs at physical fitness for shooters. He has trouble aplenty when he runs out of oxygen; his eyes blur, his vision fogs and the target grows dimmer and dimmer until, in *desperation*, he yanks that trigger to get his shot off before the black spot fades out entirely from view.

My, oh my! The bullet hits in the eight ring, or worse, and the panic is on. Fear of letting his teammates down causes his brain to send an S.O.S. over his nerve system. All the little glands jump into action; releasing drugs which needle our hero to anger. The adrenals come up

Firing line and targets on the model indoor range at the University of Maryland.



Sure dribbling

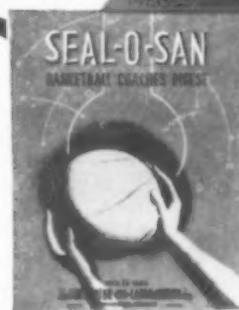


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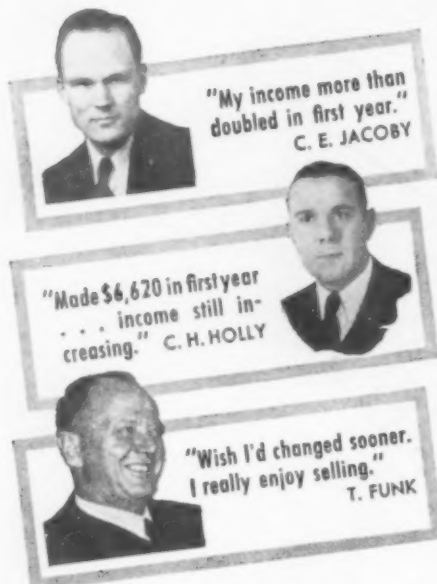
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Good muscle condition is useful to a rifleman because some strength is needed to offset the strain of holding the shooting position while strapped tightly to the rifle by a correctly adjusted gunsling. But very little effort is used in holding the rifle.

With a properly adjusted gunsling, the skeleton will hold the rifle and the only muscular exertion will be that needed to line up the

sights and squeeze the trigger.

Distance runners and swimmers, with their slow heart beat and trained breathing apparatus, possess the ideal physical qualifications for the marksman.

Very few good athletes find their way to the rifle club; other coaches claim priority on their time and efforts. However, athletic prowess is in no way necessary to a rifleman. Some cruel physical handicaps can be overcome and even spectacles, if the vision has been corrected to normal, are only a minor nuisance.

But, athletic or not, the rifleman can be in good physical condition.

AUTOSUGGESTION IN MENTAL CONDITIONING

(Continued from page 18)

Then, the subject must be taught what is called "set." For, while relaxation conserves energy, the employment of "set" enables an athlete to release that energy to the fullest and most productive extent when it is most needed—in action on the field, or in the ring.

There are many everyday examples of "set." Dr. Yates cites one of the best known—the ability to wake up at or near a given hour by simply setting the mind, prior to falling asleep, on awakening at that time.

The athlete learns to set his mind in much the same way. While in the relaxed state, which he has been taught to attain, he sets his mind on being cool, or aggressive, or confident during a coming athletic event. At this point the "set", instead of being used to awaken the athlete, is used to give him confidence or whatever attribute he desires.

"Set," to Dr. Yates, is even more important than relaxation, and "set" and relaxation complement each other. The athlete employs "set" in learning to relax, and he uses the relaxed state to firmly implant "set" in his mind.

For this reason she combines the teaching of the two. In teaching "set" the first step is to have the subject accurately analyze his main difficulty. Is it lack of confidence? Is it an inability to remember the athletic skills he has learned?

Once the difficulty has been brought to the surface it is handled in this way: A short slogan is agreed upon—a slogan such as "I will be confident"—emphasizing a positive rather than a negative point of view.

Dr. Yates helps the subject relax,

and then she repeats the slogan, amplifying its meaning to avoid monotony, but continually repeating the main theme.

The athlete is told to go over his "set" slogan each night before falling asleep, along with his relaxation procedure.

Finally, the subject must be afforded an early opportunity to "try his wings," in order to prove to himself that this method of mental conditioning does work. "Nothing succeeds like success." The San Jose boxers were encouraged to put their new-found knowledge into practice as soon as possible.

After the first few sessions, the athlete makes the entire method his own—the presence of an instructor is no longer required. Notice that the word "instructor" is used here, and not "psychologist."

That is because, as Dr. Yates points out, it is not necessary to resort to a trained psychologist, in implementing the formula.

Any coach who has gained the respect and friendship of his student athletes can achieve the desired results. His tutelage can be every bit as effective as that of a psychologist—and any small mistakes in technique will not have a hindering effect if there is a basis of friendly trust.

The actual procedure involved in setting the plan in motion has been treated only briefly in this article. Interested coaches may consult the comprehensive papers written by Dr. Yates, for more detailed information. One of these papers appeared in the *Journal of Applied Psychology* (Dec. 1943), and another in the *Journal of General Psychology* (April 1946).

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by RICHARD V. GANSLER

Mechanics Of the Pole Vault

This is the first of a series of three articles on the mechanics of the pole vault by Richard V. Gansler, one of the greatest vaulters of all time who is now an instructor of anatomy and physiology at Rutgers University.



EARLY attempts to describe the best form for athletic events can be found in the translation of the ancient Greek documents. Early paintings and vases depict the form quite well considering the absence of modern photography.¹

As early as 1800, Guths Muths, famed German physical educator, recorded vaults in excess of eight and one-half feet. There is evidence in Greek literature that these ancients were familiar with the principles of vaulting but did not use it as a competitive event.

Guths Muths had this to say in 1802:²

"I am convinced that it is scarcely possible, to acquire by any other mode of exercise, what may be accomplished by vaulting; and that strength and pliability of body, courage and presence of mind, preservation of equilibrium and accuracy of eye, are promoted by it in an extraordinary degree: whence I cannot but wish, that this exercise may by no means be omitted in a plan of Physical Education."

ELIMINATE GUESSWORK

The elimination of guesswork and bias from coaching is basic to more efficient teaching procedures and an improved calibre of athletic performance.

The efficiency of any effort along athletic or gymnastic lines depends on a close adherence to the basic

principles of mechanics. Mechanics does not confine itself to the mere study of the performance itself, but to the questions of leverage, power, strength of materials, and means of application of force.

The individual who possesses adequate knowledge about his event, who has the innate physical capacity for performance, and the intelligence and willingness to train diligently—has a reasonable guarantee of success. But if he is lacking in any one of the above specific areas, physiological or psychological, the mastery of the basic principles themselves will not make him a champion.

Our standards of athletic success are based upon the "actual competitive performance," and a weakness in any of the above mentioned areas may be equally significant in the final analysis.

Some athletic skills demand only one or two physical characteristics within the individual to assure success. Many sprinters with fast reaction time and great power do quite well even though low in skill (form perfection). Many long distance men possessed of unusual endurance but poor mechanics may likewise perform well.

Pole vaulting demands speed, strength of body, endurance of a type, and a very high perfection of mechanics (form). In its mechanical complexity, it exceeds most athletic activities. It has been estimated by Brutus Hamilton of the University

of California that a vaulter makes approximately 35 movements in a space of a vault whose average duration from take-off to the bar is about 1.01 seconds.

INTERNAL MECHANICAL FACTORS

Structural characteristics of the individual depend in large measure on having chosen the right parents. They are innate physio-anatomical qualities of the developing body.

There are definite advantages to being tall in the pole vault. Studies of high jumping³ by Krakower have indicated that taller, long-limbed individuals are more successful in high jumping. The specific advantages of height in the vault will be discussed at the appropriate time.

Muscle power is a very absolute quantity. It depends upon the size of the muscle in relation to the length of its bony lever and the speed with which the lever is moved in relation to the load imposed on it.

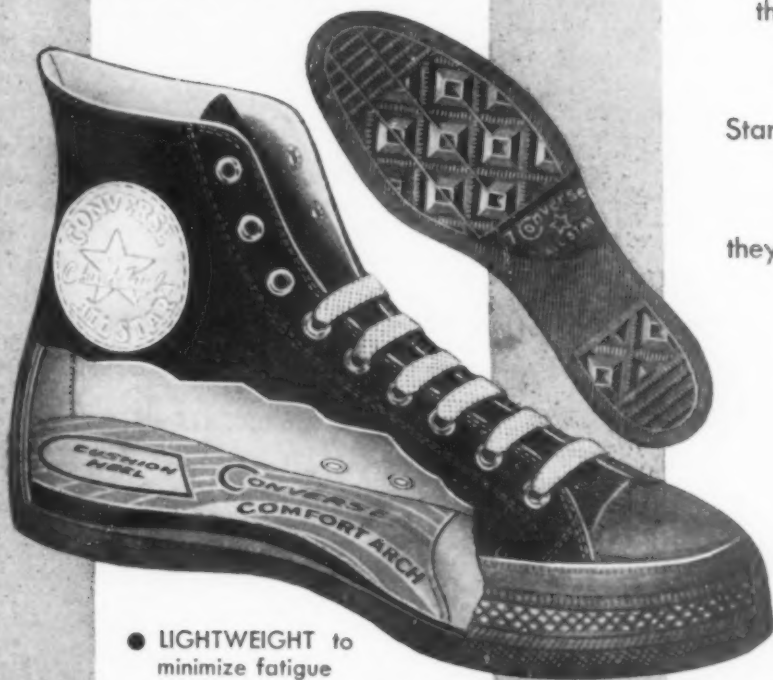
We are born with a certain number of muscle-fibre and nerve cells. Increases in muscle power are the result of increases in the size of these individual fibres or improved mechanical utilization, and are not the result of increasing the number of fibres.

Training, which increases the nutritional status, or mechanical employment of muscle groups, is a limiting factor within the individual. We can only hope to develop our muscles to their maximum limits

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and to utilize the leverages we have been blessed with to the maximum advantage.

Reaction time is the measure of the speed at which the nerve tissue conducts a stimulus. Although the rated speed of conduction is estimated at 300 feet per second, there is considerable variation from individual to individual.

Variations in the speed of conduction of the nerve impulse have been attributed to physio-chemical factors of the nerve cells and their connections, and is not as yet perfectly understood.⁴

The speed with which muscles can be brought into action depends primarily upon reaction time. This time can be improved to only a limited extent by training.

PHYSICAL LIMITATIONS

The individual possesses, by nature of his inheritance and other little understood phenomena, definite neuro-muscular limits as to speed. The ability to run fast is a combination of speed of reaction and power. Therefore, if we are to infer that the ability to vault high is closely related to run velocity, our vaulter possesses definite limits at the outset.

Pole vault action is very fast. Every year hundreds of athletes with

poor reaction time compete in events where one of the primary requisites for success is speed. This is a fallacious concept. It is the responsibility of the coach to determine the boy's capacity.

Muscle viscosity and its relationship to athletic power and speed of running have often been overlooked by the unscientific observers. Muscle viscosity is that friction within the muscle groups and between the muscle fibres which they exhibit when stretched.

Hill⁵, Best and Partridge⁶ and others have demonstrated very positively that "the maximum speed at which a man can run is dependent primarily on the internal muscle friction or viscosity. Lower viscosity, higher maximum speed and, for bodies of equal power and mass, the rapidity with which a runner accelerates—is a direct reflection of his internal muscle resistance, provided his reaction time and general mechanics are reasonably efficient."

Exact physiological evidence why one man has a lower viscosity than another does not exist. Some specific differences in the physiological quality of the muscle fibres of individuals exist. The most beneficial effect of the warm-up is the decrease in internal muscle viscosity associated with increased blood flow, and rise in body temperature.

(Continued on page 28)

MEET THE AUTHOR, RICHARD VICTOR GANSLÉN

SCHOLASTIC COACH takes great pleasure in presenting this treatise on the fundamental mechanical and physics problems involved in the coaching of the pole vault. Perhaps no one in the world is better qualified for this task than Richard V. Ganslen, one of the greatest vaulters of all time, who is now an instructor of anatomy and physiology at Rutgers University.

Ganslen, who has vaulted 14 ft. 6 in. both indoors and out, has cleared 14 ft. more times (over 50) than perhaps any vaulter in history, excepting Warmerdam and Meadows. As an undergraduate at Columbia U. in 1939, he was undefeated in intercollegiate competition, winning the NCAA title with a 14-ft. 5-in. vault. From 1937 to 1941, he never failed to clear less than 13 ft.

In 1937 he toured Japan as a member of the official U. S. track team. After several years of inactivity he returned to the vaulting wars this season and picked up where he left off, winning the season's first big A.A.U. meet in Philadelphia—despite only one workout!

He writes: "I have always been interested in the scientific How and Why of all types of athletics: What makes it possible for us to execute various athletic skills, how can we improve, and what are the maximums of human performance. I began doing my detailed motion picture studies on the pole vault and running hop, step and jump at Springfield College in 1939. I have added a great deal of information via letters from such men as Warmerdam, Sefton and Meadows. This series is only a condensation of the 400 pages of detailed work I have done on the vault.

"For the sake of brevity I had to eliminate much of the technical data as to velocity changes of the man and the pole. It may sound immodest but I believe I have probably the greatest wealth of scientific information on the vault in the world."



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Flexibility. All the muscles of our body are so arranged mechanically as to present a contracting muscle opposite an antagonistic relaxing group working on a lever.

In every instance where there is a contraction of one muscle, the antagonistic group offers some resistance to this movement, reaching the maximum resistance as the contracting group and lever reach their maximum state of contraction.

Everyone who has tried to touch his toes has experienced this drag in the bicep muscles of the legs as the hands come closer to the floor. Unused muscles lose their flexibility (range of stretch) and muscle fibres draw in on themselves, shortening their overall length.

In rapid movements this drag becomes of paramount importance, as it offers additional resistance to the contracting muscles and some energy is spent in overcoming resistance.

EFFICIENCY OF MUSCLES

Intensive flexibility exercises and proper warm-up can do much to eliminate or minimize this factor which cuts down the efficiency of the human machine. The efficiency of a muscle or group is therefore the sum total of many factors.

Method of Study. The general techniques by which the data was obtained for this study follows the principles outlined by Dr. T. K. Cureton in the *Research Quarterly*.⁷ Ten different vaulters were studied, ranging from mediocre to top-notch competitors. The purpose of this was to determine whether there was any general pattern of pole vault mechanics.

All photographs were taken at right angles to the path of motion of the vaulter so that angular measurements could be scaled with a protractor. To measure linear travel, some object of a known length was included in the photo field. When this object was projected on the screen, its actual length was again measured; this gave a simple multiplier.

For example, if some object in the field measured 24 inches true length and scaled on the projected image 24 centimeters, one centimeter equalled one inch.

Camera Speed. In order to insure accurate velocity checks during the action, the speed of the camera was checked by photographing the fall of a baseball from a known distance. The theoretical time for the ball to fall this distance can be readily computed by the formula: $S \frac{1}{2} gt^2$.

If we then divide the number of frames in the film that it took the ball to reach the ground, and divide this into the theoretical time of fall the speed in feet per second for each frame is known. As we already can scale distance from our film the computation of velocity changes of the body or the center of gravity is merely:

$$\text{Velocity} = \frac{\text{Distance}}{\text{Time}}$$

The check on camera speed is very necessary despite the fact that manufacturers rate their cameras at 16, 32, or 64 frames per second. At no time did these cameras approach this figure, and this is attributed to wear, variations of spring tension due to temperature changes or extent of winding, etc.

CENTER OF GRAVITY LOCATION

In all motion studies, the center of gravity of a body is used as a reference point. Careful attention was given to the proper location of this point to insure accurate path of parabola tracings and velocity changes.

To locate the center of gravity of the human body with absolute accuracy, you must know the weight of each part of the body and its distribution from the center. You must then mathematically sum the forces exerted at a point.

In pole vaulting there are approximately 30-40 body position changes. Since any slight change in position moves the center of gravity, determining the c.g. by the aforementioned method would be an excessively laborious procedure.

A more subjective compromise procedure was hence used. Previous experimenters^{8,9,10,11} in body mechanics have worked with center of gravity location. Using this information as a basis, the center of gravity of the jumpers was located as accurately as possible. With an experienced and careful worker this technique is highly satisfactory.

Physical Characteristics of Great Vaulters. No pole vaulter under 6 feet in height has ever cleared the bar in excess of 14 feet 5 inches. The top 20 pole vaulters in the world to date have averaged 6 feet ½ inch in height, 164 pounds in weight, and 22.2 years of age at their peak performance.

The smallest outstanding vaulter was Sueo Ohe of Japan, who cleared 14 feet 4 inches several times. He weighed 136 pounds and stood 5 feet 9 inches.

Sefton and Padway stand at the other end of the scale, both men
(Continued on page 32)



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Extra Pay for the Coach

ARGUMENTS PRO AND CON

by JOSEPH C. CARLO

MONEY! How is it possible to earn more money? Everybody from the lowest-paid laborer to the highest-paid "white collar worker" is asking the same question. More money, higher income, to meet the rising cost of living—that's the demand of practically every breadwinner.

Our high school coaches are no different than anybody else. Their cost of living has also increased, and in seeking a means of adding to their income, they have begun to analyze their present positions.

They find they are putting in extra hours of work in coaching various athletic activities (before school starts in September, mornings, afternoons, evenings, and during holidays).

Some coaches feel they should receive extra pay for this extra time. The amount they ask varies with local pay scales and their coaching responsibilities.

Some of them are expected to handle all sports; others, two sports; others, one sport and assistance with another; others, one sport only; and still others, to conduct only intramurals.

A recent National Education Association survey on extra pay for coaching duties showed a variation in rates from \$1 per hour in Elizabeth, N. J., to \$1,850 per year in Louisville, Ky. (Coaches interested in this survey may find a condensation of it on page 22 of last month's *Scholastic Coach*.)

Regardless of these amounts, there are numerous arguments on both sides of the question "Extra Pay for Coaches?"—the side of the coaches, and the side of the school officials. Final authority rests with the school boards. Requests for this extra pay must be presented to these boards.

PRO ARGUMENTS

Before a just decision can be made, it is hoped that every pro and con will be carefully considered. To this end—as a guide to coaches and school officials—the following pros and cons are presented:

1. The coach's day at school usually averages three to four hours longer than that of the other teachers. This may come in the morning

before school, as well as the afternoon after school, or at night. The coach also spends many a Saturday, day or night, on the job.

2. The coach is expected to work several weeks before school opens in September if he coaches football; during Christmas holidays if he coaches basketball; and during Easter holidays if he coaches baseball or track.

3. Often, because of their position, coaches put in extra time as speakers or representatives of the school at civic meetings or other local club functions.

4. As physical education teachers, coaches usually carry a full teaching load; they are required to teach academic classes in health along with heavy programs of activity classes.

5. In most school systems, the men are hired as physical education teachers, and the responsibility for coaching one, two, three, or all four major sports is given as an extra assignment.

6. In large school systems, some men may have only a physical education assignment and yet receive the same pay as the men who have the additional coaching responsibility.

7. Teaching salaries are so low that coaches need extra compensation to stay in the teaching and coaching field.

8. The extra pay for coaching would tend to eliminate the necessity to seek such outside positions as game officials, community center leaders, salesmen, and laborers, in order to supplement the teaching salary.

9. A car is almost a necessity for a coach for transporting players and for scouting, thus making an extra financial demand on him that is not made on other teachers.

10. There is already a precedent for granting coaches extra pay. In the National Education Association study previously mentioned, a survey of cities of over 100,000 population showed that extra pay was granted to coaches over their regular salaries in 53 of the 81 cities which reported.

11. An increase in salary or a bonus would create a challenge and thus encourage coaches to do a better job.

"The recent unrest in many communities over coaching salaries makes me feel that an article on the subject would be very much in order at this time. As a coach and former administrator, I can see both the pros and cons of extra pay for coaches. It is my purpose here to provide coaches with the arguments for extra pay and to let them know what reaction they may expect from their administrators."—Joseph C. Carlo, football coach and physical education instructor, Woodrow Wilson High School, Washington, D. C.

12. In city systems, custodians and laborers who put in extra time get overtime pay, whereas coaches get nothing extra for the time they put in outside their regular teaching jobs.

13. The extra pay would make it possible for the coach to maintain a standard of living in keeping with his position in the community.

14. The increased income would encourage better-trained, more desirable men to enter the field of physical education and coaching.

15. Physical education men in large city systems are taking outside coaching jobs for extra pay rather than accepting school coaching assignments, thus creating a coaching problem in the school. Extra pay for coaching would eliminate this competition with outside groups for the coach's services.

CON ARGUMENTS

Following are the arguments against extra pay for coaches:

1. Extra pay would put coaches in a special class and draw criticism from other teachers.

2. Other teachers who have charge of dramatics, music, etc., would become dissatisfied and demand extra pay.

3. Extra pay for coaches would create a strain on already inadequate educational budgets.

4. Additional income for coaches would lessen the possibility of an increase for all teachers. Most school boards are economy-minded and would like to get by with paying as little as possible for teaching.

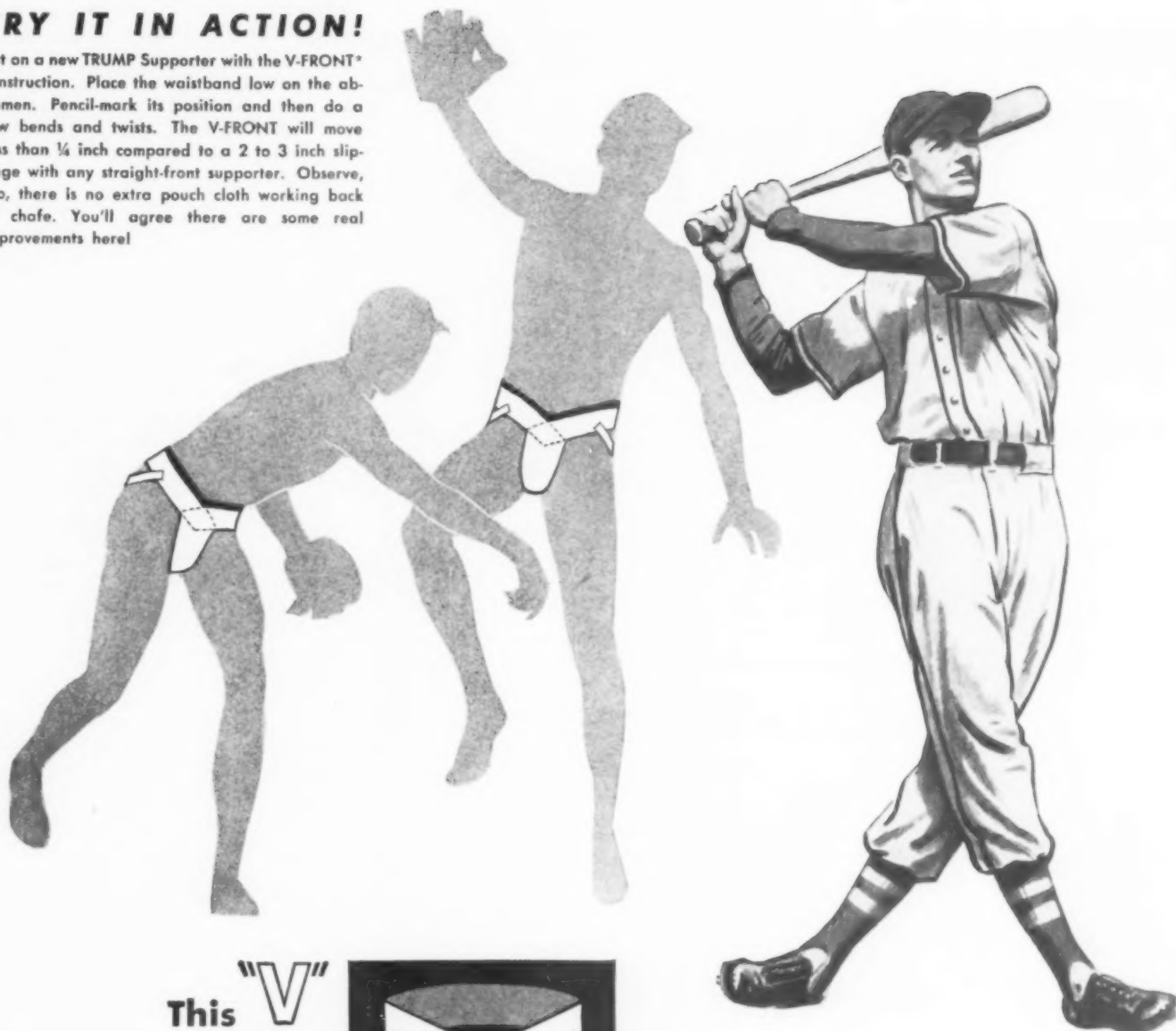
5. Extra pay for coaches will not solve the basic difficulty of all teaching salaries being too low.

6. Teachers know that when they go into the physical education field they are expected to put in extra time in coaching.

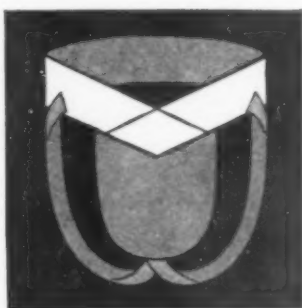
7. Extra pay for coaching re-

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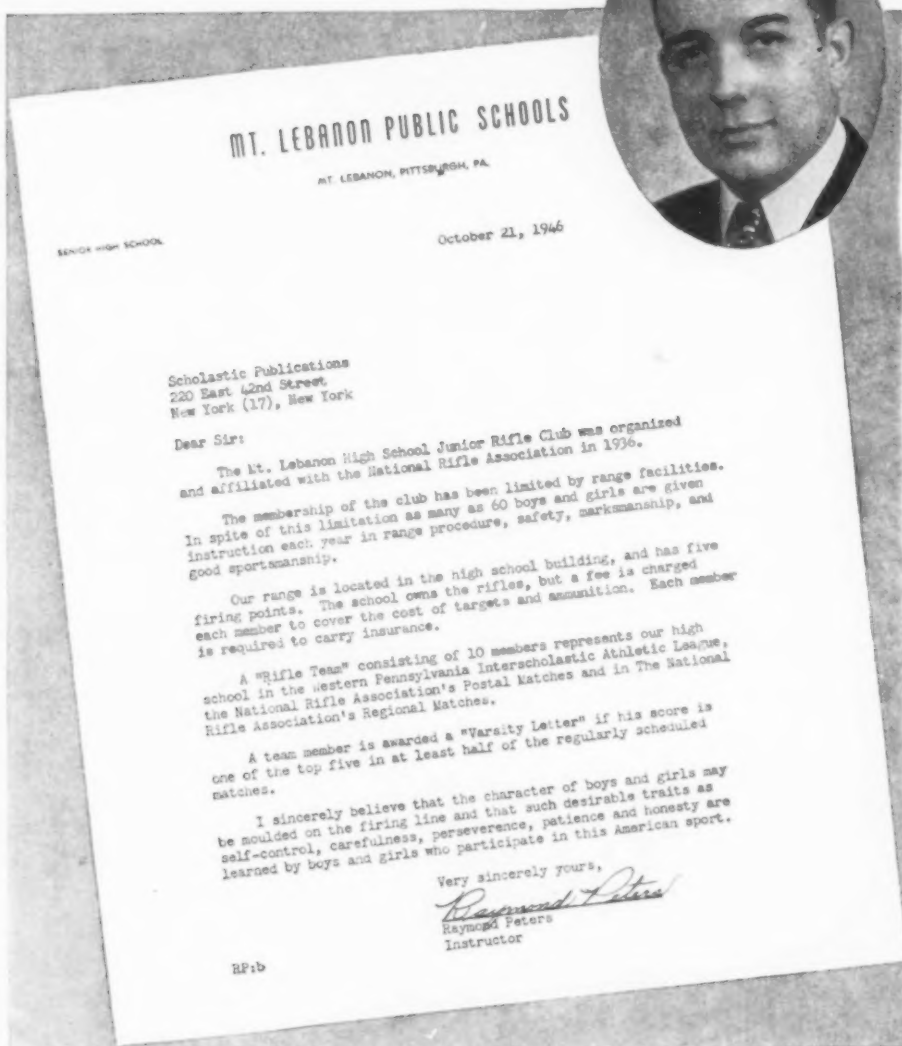
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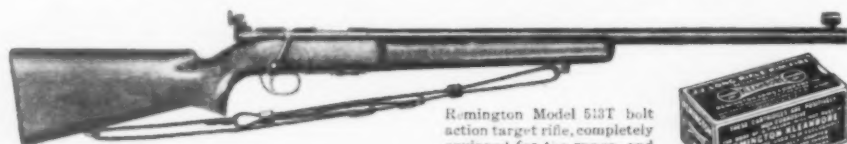
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sulting in increased competition for coaching jobs would place such an emphasis on winning as to be detrimental to the players.

8. Administrators in most school systems have long recognized the extra time put in by coaches by not assigning them many of the extra duties usually given to teachers. Extra pay would eliminate coaches from such consideration.

9. Many administrators would welcome the request for extra pay so that they could use it as a reason for eliminating varsity competition in high school.

10. Extra pay for coaches may bring decreased athletic equipment budgets. This is especially true in rural areas with modest budgets, where the increasing costs of athletic materials make it difficult for school boards to finance athletics.

These are the major arguments that may be presented for or against a program of extra pay for coaches. We have made no attempt to decide one way or another. Each community must meet the problem in the light of its own situation.

It is our hope that this presentation will help many schools to analyze their problems more accurately and arrive at a fair and satisfactory solution.

Pole Vault

(Continued from page 29)

topping 6 feet 3 inches and averaging 183 pounds.

Warmerdam, holder of all the world's records, is a fraction under 6 feet 1 inch and weighed around 165 pounds at his peak.

Age seems to affect vaulters very little. Warmerdam cleared 15 feet when 29 years old, and many of the better vaulters beat 14 feet long after 27-28 years of age.

Meadows started out as a pole vaulter after graduating from high jumping and running the 880. Sef-ton was an outstanding gymnast and threw the discus over 140 feet. Warmerdam was a Pacific Coast basketball star. Varoff tried every event in track before he made a success of vaulting. Brown, of Yale, high jumped over 6 feet 6 inches, as did Guinn Smith of California.

The writer started as a runner only to end up in the vault along with the broad jump (23.8), high jump (6 feet), and hop step and jump (49 feet).

It is evident from this that top-notch vaulters as a group display prowess in a variety of athletic or track activities—an indication of their all-around coordination, skill,

and some measure of their power capacity.

These men have a solid foundation physiologically, structurally and, to some extent, psychologically to assure a reasonable measure of success. In addition, most of the world's top vaulters began working and practicing the vault at the age of 12 or 13 years of age, to build a sound foundation in mechanics (form) for success 10 or 12 years later.

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- ¹¹Cureton, T. K., and Wickens, J. S., *The Center of Gravity of the Human Body in the Anterior Posterior Plane and Its Relation to Posture, Physical Fitness and Athletic Ability* (Supplement to the Research Quarterly, 6:93-105, May 1935).

THAT OLD KENTUCKY HOME

The Sat. Eve. Post has re-discovered Adolph Rupp. In an article entitled, "The Crafty Wizard of Lexington," America's National Institution tells all about the Kentucky coach—for the umpity-eighth time. But it's a nice enough tale.

The author, Collie Small, doesn't pull many punches. He calls Adolph "the most hated coach in Dixie," then goes on to spin a hat-full of neat anecdotes about him. He tells about the time a Big Nine coach, in a burst of righteousness, cast aspersions on the purity of Kentucky, taking Professor Rupp to task for raiding the North for basketball players. He called this "carpetbagging."

A short time later, Rupp was invited to speak at a banquet in Ohio, deep in Big Nine territory. When asked what his subject would be, Rupp exclaimed: "My text will be: A Carpet-bagger in the Holy Land."

Rupp's carpetbagging doesn't show up in the records. Most of his players are mountain boys. Adolph is very fond of quoting the bible: "I will lift up mine eyes unto the hills, from whence cometh my help."

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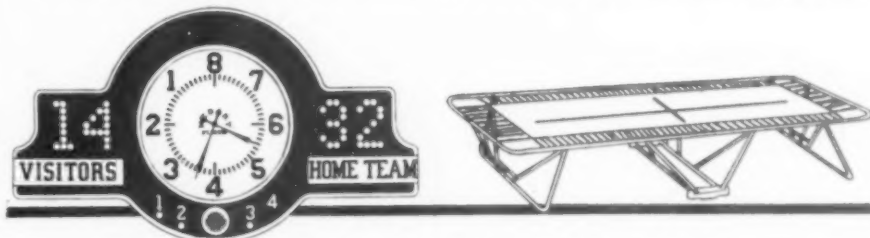
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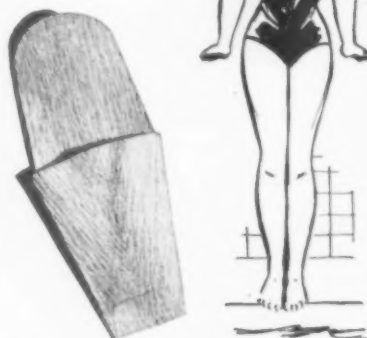
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Competitive Track for Junior High Schools

by **CHARLES J. WILD**

Charles J. Wild coaches swimming and track at Lincoln Junior High School in Rockford, Ill.

BECAUSE soundly adapted and capably administered programs of competitive sports have much to offer the junior high school boy, we at Lincoln have developed a good, constructive competitive track program, which we are passing along here with the hope it may benefit other junior highs throughout the nation.

Our program of events is patterned after the interscholastic program wherever it conforms to the best interests of the junior high adolescent. For this reason, we have eliminated three events and altered three others.

The events eliminated are the high hurdles, mile run and pole vault. The altered events include the low hurdles, shot-put and discus.

The order of events is as follows: shot put, high jump, 110-yd. low hurdles, 100-yd. dash, discus, 440-yd. run, 220-yd. dash, 880-yd. run, broad jump, and 880-yd. relay.

In the 110-yd. low hurdles, we use five hurdles set 18 yards apart with a 20-yard sprint from the fifth hurdle to the finish. Our shot weighs eight pounds, while the discus is the regulation junior high implement.

In the high jump, we start the bar at 4 ft. 6 in. and raise it two inches at a time until we reach 5 ft., after which it is raised one inch at a time.

FIVE FIELD TRIALS

Competitors in the broad jump, shot and discus are given five trials, with the best effort counting. By eliminating trials and finals, we greatly speed up the events.

Along with the aforementioned events, we offer three events exclusively for seventh and eighth grade boys. They are a 75-yd. dash, a high jump and a 440-yd. relay. These events do not count in the scoring. They are on the program mainly to furnish experience and to stimulate interest among the younger and smaller boys who have no opportunity to compete in the varsity events.

We run these special grade events along with the varsity events; running the dash right after the 100, the high jump after the varsity high jump, and the relay before the varsity 880 relay.

The bar for the grade high jump is started at 3 ft. 8 in. and raised two inches at a time until it hits 4 ft., after which it is raised one inch at a time.

A boy is allowed to compete in only three events. But if he enters in either the 440 or 880, he may compete in only one other event.

In dual meets, each school is permitted four entries in each event, except in the hurdles and sprints, where the limit is three.

THREE-ENTRY LIMITATION

In triangular or championship meets, a school is limited to three entries, except in the hurdles and sprints, where only two are allowed. This restriction is necessary since our stadium track has only six lanes.

We schedule a dual meet with each of the other two junior highs in town, and another meet with the high school sophomores. Inasmuch as the city's high school conference runs a special conference meet for sophomores, this requires no special scheduling on our part. The meet gives both the high school sophs and our junior high boys valuable experience and some fine competition.

To cap off the season, we run a triangular meet for the city junior high championship. This meet produces some fine performances, as the following records will attest:

110-yd. low hurdles . . .	13.4
100-yd. dash	10.2
220-yd. dash	22.7
440-yd. run	54.7
880-yd. run	2:07.3
880-yd. relay	1:40.4
8-lb. shot	53'6"
Discus	137'8"
High jump	5'9"
Broad jump	21'3"

More important than the actual performances, however, is that the boys have a lot of fun and good, wholesome exercise.

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Volley-Bounce

A STRENUOUS GAME FOR FOUR PLAYERS

by J. B. McLENDON and L. T. WALKER

PHYSICAL education instructors looking for new recreational games with which to stimulate their programs would do well to explore the possibilities of Volley-Bounce, a strenuous game for four players which combines the more fun-ful features of volleyball, tennis and handball.

The game has proved very popular at North Carolina College because we have deliberately made it tough. We recommend it highly on three counts:

1. It offers lots of fun.
2. It is an excellent conditioner.
3. It develops several fine skills.

The game is played on a 70 ft. x 34 ft. court split by a net 7 ft. high. Two players on each side attempt to volley the ball (a regulation volleyball) over the net in a manner difficult to return, as in volleyball or tennis.

The ball may be hit twice by each team, either on the fly or after a bounce.

Here is a chronological picture of the game. We guarantee your students will like it.

The Court. The game is played on a rectangular court 70 ft. in length and 34 ft. in width. The lines at the ends are called "end lines," and those on the sides, "side lines." The line in the center is called the "center line." A line located 6 ft. from the center line and which crosses the court is called a "restraining line." A "serving line" crosses the court 5 ft. from each end line.

The Net is a regulation volleyball net placed directly above the center line. The top of the net is 7 feet above the court.

The Ball is an official volleyball.

Uniform. A regulation gymnasium uniform, including basketball shoes if the game is played indoors. Recreational clothing if played out-of-doors.

Serving and Scoring. Either of the two players on a side may serve at any time that side is eligible to serve.

The Service must be started at any point behind the serving line and between the side lines. The ball

must leave the server before he steps into the court.

The ball may not be aided over the net by the server's teammate.

Only the serving side scores. Eleven points is the game. In case of a tie at ten-ten, the serving side must score two successive points before winning. The score continues.

Conducting the Game. A player may elect to volley the ball back over the net before it hits the floor or he may allow it to bounce once before returning it or volleying it to his partner.

On receiving the ball, the partner must play it over the net. The ball may be hit only twice. On the second time it must be returned over the net and between the posts. A ball may bounce only once on either side before being returned.

A ball hit by an opposing player may bounce in the court and over the end or side line. It is not considered out of bounds until it hits the floor or some obstruction outside the end or side lines. Such balls must be played.

A ball hit by a player to that player's teammate which bounces in the court and over the end or side line must be played.

If the ball is in flight over the end or side line from a volley by a teammate, it must be played over the net from the air.

Special Rule. Within the restrain-

J. B. McLendon, Jr., and L. T. Walker are both connected with the department of physical education at North Carolina College, the former as director and the latter as assistant director.

ing lines, a player, when playing the ball from his teammate, must keep one foot on the floor in volleying the ball over the net. This eliminates "spiking" inside the restraining area.

Any "spiking" of a ball volleyed by a teammate must take place behind the restraining line.

A ball hit by an opponent may be "spiked" from within the restraining line.

Other Rules.

All balls must be played back to the opposing side over the net and between the net posts.

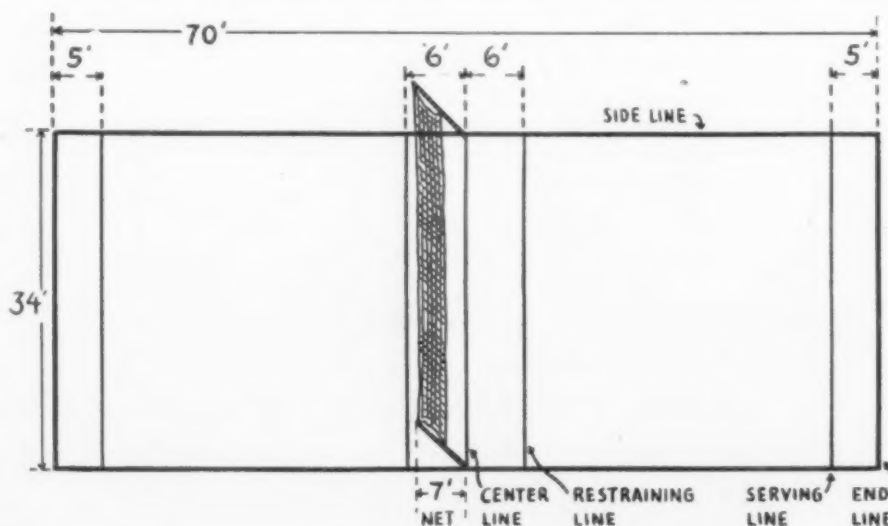
A ball hitting on the line is considered outside.

A net ball on the service shall be served over.

A player hit by the ball loses the ball or point.

Other violations causing forfeiture of point or ball:

1. Hitting the net with any part of the body.
2. Stepping over the center line while the ball is in play.
3. "Spiking" the ball within the restraining line when it is in play from a teammate.
4. Reaching over the net.
5. Illegal service.



- ☐ Bob Feller
- ☐ Ted Williams
- ☐ Whitey Kurowski
- ☐ Pee-wee Reese
- ☐ Johnnie Pesky
- ☐ Pete Reiser
- ☐ Joe Gordon
- ☐ Johnnie Mize
- ☐ Charlie Keller
- ☐ Marty Marion
- ☐ Walker Cooper
- ☐ Billy Herman
- ☐ Ken Keltner
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by DICK MILLER

Off-Track Training

Dick Miller, of the University of Nebraska, is the Big-Six pole-vaulting champion and a specialist in matters pertaining to athletic training.

TO realize fully on his potentialities, the track athlete must think of his training program as a 24-hour responsibility—not as a two-hour turn around the track every afternoon.

What does "off-the-track" training consist of, and just why is it so important?

Physiologists haven't fully discovered what causes sleep. But we do know that a certain amount is necessary for physical and mental fitness.

It is difficult to frame a definite rule regarding the number of hours of sleep. This varies with the individual. However, it is generally agreed that eight or nine hours of regulated sleep is sufficient for the athlete, and more isn't harmful.

Regularity in time and hours of sleep is important. Regularity in sleep, as regularity in meals, establishes a rhythm whereby the body craves sleep at the established time, much the same as our hungry feeling at mealtime.

It is important to eat well-balanced, nutritious meals. Food provides the coal for our body furnace. There are many misconceptions concerning the athlete's diet, and widely varied opinions upon its importance.

TEMPERANCE AND MODERATION

I believe diet is important, but that emphasis need not be placed on it. Temperance and moderation are the keywords in dietary control as in all phases of everyday living.

The athlete should avoid habitual overeating. Dean Cromwell, Southern California track coach, thinks the best exercise for track men is "a pushaway from the table."

Meals should be simple and wholesome—fancy dishes are usually of lower nutritive value than the basic foods. I would advise the

athlete to avoid pastries and pie crusts, and all greasy foods. Plenty of fresh fruits and vegetables are needed.

Milk, if drank properly, doesn't cut the wind and is easily digested. But it should never be used to wash down solid food. This hinders mastication and insalivation of the solid food.

If milk is gulped down, it forms large curdles in the stomach which digests slowly and may cause gas. If milk is sipped and "chewed", it forms small curdles in the stomach and is easily digested.

The athlete shouldn't rush through meals. By thoroughly masticating and insalivating his food, he puts the minimum tax on his digestive system and prepares the food for maximum utilization of nutritive content.

Water is probably the most important single constituent of the body. Sixty-three percent of our body is water. It should be taken freely and in satisfying quantity whenever the urge arises. Iced water isn't recommended, as it tends to constrict the blood vessels of the digestive tract.

Twenty years ago most trainers strictly forbade the use of sweets in candy form. We now recognize candy as a good source of energy. However, its usage should be limited to the period immediately following meals, and it should be taken in small or moderate amounts. Large amounts may cause fermentation and gas.

Chewing gum is beneficial in that
(Concluded on page 40)



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it induces the flow of gastric juice and helps clean the mouth. It should be chewed following the meal and up to an hour afterwards.

Continuous use of gum isn't advisable. Once food has left the stomach, chewing gum loses its value as a digestive aid and should be discarded, since gastric juice is continuously secreted during the chewing process.

The belief that chewing gum relieves nervous tension has no physiological basis. It is, rather, a psychological problem. Some athletes must chew gum while they compete. If the athlete believes it helps him, it probably does—psychologically.

NO PLACE FOR TOBACCO

The use of tobacco has no place in the life of an athlete and *shouldn't* be tolerated. Nicotine is one of the most powerful poisons known.

A drop applied to the tongue of the guinea pig or the shaven skin of a rabbit is enough to cause death. Less than one-fifteenth of a drop injected into the vein of a man causes a decrease in heart beat, rise in blood pressure, and a drop in skin temperature.

The use of tobacco may cause nervousness, loss of weight, poor appetite due to injury of the mucous lining of the mouth and throat (which deadens taste), and "short-wind."

The nicotine forms a microscopic coating on the air cells or alveoli of the lungs. These alveoli are important because oxygen is taken on and carbon dioxide is given off through this very thin layer (about .1 microm in thickness). The nicotine coating on the inner side of the alveoli slows down this exchange—this we call "short-wind" effect.

All forms of alcoholic beverages should be taboo. Alcohol itself is a poison to the living tissues. Put a raw egg in a glass of alcohol and you will see the cooking effect alcohol has on the egg.

Even in small quantities, it produces definite effects on the body. It generally acts as a depressor. The common belief that alcohol is a stimulant is erroneous. Its stimulating effect is far outweighed by the depressor effect.

Nervous control and motor coordination are reduced by its use. Moderate amounts affect attention, reason and judgment.

How do sexual experiences affect athletes? There are both physical and psychological effects. Physically, any emotional experience leaves the body tired, slowing down the reactions.

If your basketball team wins a game in the last ten seconds, the ex-

citement they have experienced will produce a letdown at the finish. The saying "I got so mad I was weak" is the same emotional state.

Any athlete when ready to compete wants a maximum of nervous energy. It will not be available if used in other ways.

Psychologically, an athlete who indulges in sexual practices which he knows aren't in line with close training, will let down mentally through lack of will-power to restrain himself. Such practices may also develop an inferiority complex and introvertic tendencies.

I believe the psychological aspects of this question may be more detrimental than the physical ones. The ancient Greek in competition for the world's most coveted award, the olive wreath, entirely excluded sexual experience during his two-year training period. This is an extreme example, but it does illustrate that if an athlete wants something sincerely enough, he will abide by every training rule.

DODDS RIGHT

Gil Dodds, Nebraska's world champion miler, says this about training: "The road to athletic supremacy, like the road to everything else, is full of ruts and trouble. Part of the price that must be paid for athletic success is in the physical field. This includes hours of practice and conditioning, an unbroken routine for food, rest and appropriate types of relaxation.

"It is important that one doesn't train too hard. Much more harm may result from overtraining than undertraining.

"The true athlete must also take in the realms of will-power and temperance. Great athletes know that loose living and success are antonyms. Drinking and misuse of sex aren't indulged in by champions. These qualities in character add wings to a runner's heels, because he knows he rightfully deserves success and will rightfully use it when it comes his way."

The average high school athlete has many time-consuming, strain-producing activities in his pattern of daily living.

Schoolwork, extra-curricular activities and his new social life exact great physiological tolls. That's why it is so important for him to abide by proper training rules in regard to sleep, rest and diet.

(Ed. note: Coaches interested in all the phases of proper off-field living should refer to Dr. Henry F. Donn's series of hygiene articles, the latest of which appears on page 50.)

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New Books on the Sport Shelf

BASEBALL (*Individual Play and Team Strategy*). Second edition. By Jack Coombs. Pp. 340. Illustrated—photographs, drawings and diagrams. New York: Prentice-Hall, Inc. \$3.50.

ALL of you probably know about this book, inasmuch as it has had eight printings since it first appeared in 1933.

It covers the entire game in complete, highly authoritative fashion, with the scientific detachment you'd expect from one of the greatest pitchers the game has ever produced.

In this second edition the author, who now turns out championship teams at Duke with monotonous regularity, has added a valuable chapter on the scoring of the game and another on the treatment of minor injuries. The latter is a contribution from Dr. Lenox D. Baker, of Duke's School of Medicine.

Every coach will find this book a splendid practical guide on absolutely every phase of the game.

CONVERSE HANDBALL HANDBOOK. Pp. 30. Illustrated—photographs and line drawings. Malden, Mass.: Converse Rubber Co. 15¢.

ONE of the few books ever devoted to this great sport, the *Converse Handball Handbook* will prove a definite aid to both players and coaches.

Compiled with the assistance of scores of the nation's leading players, it covers the game tersely, practically and interestingly, embracing the history of handball, the correct methods of playing it, and the official rules.

The technical sections offer valuable instruction on warming up, uniforms, use of the hands, body and feet; strokes, serves, kill shot, and strategy.

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Prices for lots are: 100 @ \$7.50; 50 @ \$4; and 25 @ \$2.50.

THE HISTORY OF PHYSICAL EDUCATION (*Third edition*). By Fred Eugene Leonard. Revised and enlarged by George B. Affleck. Pp. 480. Illustrated—photographs and drawings. Philadelphia: Lea & Febiger. \$5.50.

WHEN Dr. Fred Eugene Leonard, of Oberlin College, passed away, the physical education world lost one of its most brilliant historians. His book on the history of physical education was one of the classics in the field.

And it still is, thanks to George B. Affleck, former physical education director at Springfield College, who has revised and enlarged the book.

This third edition brings up to date the significant facts concerning the development of physical education throughout the world. It indicates the main contributions of certain leaders and of their successors during the last 20 years.

The first part describes the growth and the varying ideas of physical education from the early Greeks and Romans down to the latter-day movements in Denmark, Sweden, Germany and England.

The second part deals with the development of physical education in our own country, in the American colleges and universities and the Y.M.C.A.

The manual describes the playground movement in America, the training of teachers, and presents brief biographies of some of the more important pioneers, such as Dr. Ernst Hermann Arnold, Dr. James Huff McCurdy, Dr. Robert Tait McKenzie, and Dr. James Naismith.

The text is a paragon of thorough, painstaking, historical research. The numerous monographs referred to in its bibliography may serve admirably as a source from which further studies can be made.

The book offers a thorough and discriminating study with which every teacher and student of physical education should be familiar.

ACROBATICS FOR ALL (*Coeducational Acrobatics Simplified*). By Erwin F. Beyer. Pp. 123. Illustrated—photographs. The University of Chicago Press. \$3.

PERHAPS you've heard of Bud Beyer, who is assistant professor of physical education at Chicago U. Some years ago he started showing a group of young cheerleaders how to perform a few tricks. They liked it. So they started a class.

The first class grew from six members to about 40. Then a national magazine gave them a three-page spread. The result was a flurry of letters asking how to do the stunts and how to organize acrobatic classes. That's how *Acrobatics for All* was born.

The first part of the book instructs the reader in the development of basic acrobatic movements, and in beginning, intermediate and advanced couple movements. Forty-three stunts and warm-up exercises are carefully explained with the aid of 174 pictures.

Part II explains the development of exhibition routines, and the author's assembly-line technique of teaching.

The step-by-step explanations are



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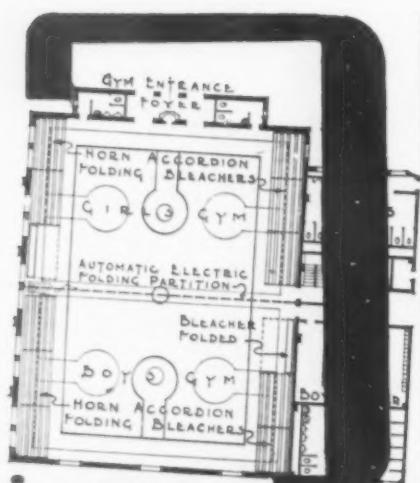
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PLAY BALL, SON! By Bert V. Dunne. Pp. 146. Illustrated—photographs. San Francisco: Serra Publishing Co.

JOE CRONIN says *Play Ball, Son!* is the best technical book on baseball ever written for boys. And he probably isn't too far off base. It really is an unusually helpful treatise, written by one of the keenest baseball technicians extant.

Dunne, a former big leaguer, has been working with kids for years, and knows exactly how to teach baseball to them—as men who've seen his coaching film will attest.

He takes full cognizance of the boy's physical limitations and adapts the mechanics of form accordingly. In offering these nuggets, he addresses the boy directly. He covers everything from soup to nuts to bunts—the play of each infielder and outfielder, throwing, catching, pitching, and batting, with particular emphasis on the latter.

The instruction, based on the best scientific-mechanical principles, is as sound as the Yankee dollar. Dunne studs it with gems culled from his personal experiences with many of the game's greats, such as John Mc-

Graw, Ross Youngs, Rogers Hornsby, and others.

All in all, it makes absorbing reading—both from the technical and feature standpoints.

Coaches who purchase the complete *Play Ball, Son!* baseball coaching film unit (distributed by Young America Films, Inc.) receive 10 copies of this book free of charge. Otherwise it sells for \$2.

HOCKEY: (1) *How to Train*, (2) *How to Play*. By Lloyd Percival. Toronto, Canada: The Y.M.C.A. Sports College. Free.

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Tennis Strategy Simplified

(Continued from page 12)

In doubles, the points of attack are fewer. The court is better covered and good spots are more difficult to find.

Doubles calls for teamwork, good volleying, good overhead shots, an ability to make quick decisions, and an ability to get to the net and stay there.

In the main, the most vulnerable point to hit is C, because it is impossible from that point for the receiving team to pass the attackers at the net. The only resource for the defenders is to lob. A lob may win points, but usually it serves only to keep the defensive team in the game awhile longer.

Another reason for center-point C being the weak spot in defense is the fact that a doubles team is usually positioned so that the best forehand stroker plays the right-hand court (speaking of right-handed players in this case) and the backhand expert plays the left-hand side. This means that the weakest point for each player, and for the team, may be the center.

Points D, E, F and G are serving targets. The servers should hit the corners of the service courts to draw the opposing teammates apart or to bunch them in the center.

Doubles is a more scientific game than singles in that the possible target areas are fewer, the openings more difficult to find, and the time available for making a placement much less. The margin for error is reduced.

Court strategy briefly consists of keeping the ball in play and keeping the opponents on the run, off balance, and guessing.

Doubles involves the same elements of strategy as the singles game plus the necessity of learning to go to the net in parallel positions. This enables each partner to take the shots he can best make, to interchange positions at the proper time, and to keep the ball aimed at the target points.

Harmony is the key to successful doubles play. The players should refrain from sulking and criticizing each other's play. The resentment thereby created ruins the confidence of both players and mars their concentration.

Even when the breaks are falling badly, the players should be pleasant to one another and encourage, rather than carp and quibble. Each should do all within his power to steady the other's nerves and bolster his confidence.

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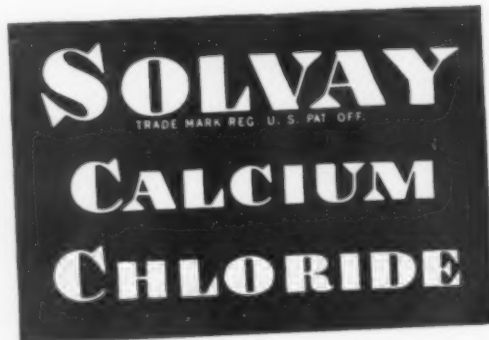
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GRID FATALITIES 1931-1946

Here are some of the highlights of the 15th annual survey of football fatalities prepared for the American (College) Football Coaches Assn. and the N.C.A.A. by a special committee headed by Dr. Floyd R. Eastwood, of Purdue University.

REMEMBER the "hue and cry" that was raised over the 49 football fatalities in 1931? At that time little data and no accumulative records were available. So Dr. Frank S. Lloyd, the writer (Dr. Floyd R. Eastwood), and the late Fielding Yost started accumulating factual information on the subject.

Thanks to the efforts of this committee (now part of the Football Coaches Assn.) and the various press associations, the public has been well educated to the implications of fatalities on the gridiron.

The public's objective attitude toward the hazards of football is reflected in the small amount of hysteria which accompanied the fatality statistics of the past season, which were the highest since 1938.

SUMMARY

Here are some of the highlights of the latest report:

1. During the 15 years of this study there have occurred 283 fatalities directly due to football and 147 indirectly.

2. Twenty-one fatalities occurred during the current season as a direct result of football—one in sandlot, five in athletic club, thirteen in high school, and two in college. Four indirect fatalities also occurred during the present season.

3. More direct fatalities occurred this season (21) than for any year since 1936, when 26 deaths were ascribed to football. The current season ranks sixth in the number of direct deaths since 1931.

4. The average incidence of high school fatalities per 100,000 players is the highest (2.11) except for the year 1935 when it was 2.27 and 1937 when it was the same (2.11). The rate for colleges (3.04 in 1946) has been exceeded in 1931, 1934, 1935, and 1939.

5. Consistent with the 14-year findings, most direct fatalities occur during a regularly scheduled game. The average percentage for the 14-year period was 43.9% for "regular game" fatalities, while in 1946, 66.6% (14 of the 21 direct fatalities) occurred during a regular game.

6. Again, Pennsylvania and New York rank first and second in number of fatalities for 1946. The two states also rank the same for the 15 year period.

7. No change in age of fatalities occurred during 1946. Players between 16-18 years account for the greatest number of direct football fatalities.

This should be expected as the greatest number of players are participating during these ages.

8. It has been hard to predict the weeks during which the greatest number of fatalities occur. During the past 14 years it was usually during the second, third, and fourth week of October or the third week in November. In 1946 it shifted to the fourth week in September, the second week in October, and the third week in November.

9. A slight increase in number of direct fatalities occurred in 1946, during the 26-45 minutes period (12.2% in 1931-1945 and 14.9% in 1931-1946).

10. The majority of the direct fatalities during 1946 occurred during the fourth (16%) or second period (13.1%).

11. Halfbacks (18.4%) and ends (12.4%) still continue to be the positions which present the greatest possibilities for fatalities. Ends and fullbacks have a slightly higher percentage of fatalities in 1946.

12. Tackling (30.5%) and tackled or blocked while carrying the ball (11.0%) still are the most hazardous football activities.

13. Fatalities on the defensive are steadily increasing. They were greater by 5% when considering 1946 (32.4%) than during the last 14 years (27.1%).

14. The direct causes for football fatalities for 1946 and for the 15 years are (1) skull and/or cerebral hemorrhage (45.7%), (2) abdominal (in-

ternal injury) (29.1%), (3) spinal injury (22.0%).

15. Infection is still the greatest indirect cause for football fatalities (56.4%) followed by heart attack (18.4%).

CONCLUSIONS

1. Increased participation in 1946 may account for the increase in number of fatalities. Equipment and other factors are also interpreted reasons for the increase.

2. Football is still much less hazardous on a per 100,000 player basis than being a pedestrian, driving a car or hunting, when the basis for comparison involves the same age ranges (15-24 years).

3. Weather conditions and chance seem to determine the weeks during the season when most direct football fatalities occur.

4. High school rule changes on warm-up periods before the first and third periods have seemingly tended to reduce the fatalities in these game periods.

5. The backfield players are more susceptible to fatal injuries than the line.

6. Nearly a third of all fatalities occurred as a result of tackling. This activity certainly does not make up a third of the play situations during practice and games.

7. Defensive football is slowly be-

coming more hazardous than offensive football.

DISCUSSION

An honest appraisal of any situation should reside in known facts. It certainly is not amiss to indicate that many of our judgments are infrequently based on fact.

Especially is this true when the situation is surrounded by a heavy peripheral layer of emotion such as is found in football. Not a week passes during the football season that someone does not come out in print with a statement primarily based on "wishful thinking" rather than fact.

Through the clipping service used in this study a recent newspaper release carried a tirade against the kick-off and its hazards. The facts are not consistent with the statements made in this release. Kick-off injuries have never been as numerous as off-tackle, line plunging, and end sweeps. Further, few football fatalities have occurred during kick-off plays over the past 15 years.

Nevertheless some facts are available which should be appreciated when planning football practice sessions and regulating the care and treatment procedures of injuries.

A study made by Joseph Dolan in 1946 of spring practice injuries indicated that there was a greater frequency of injuries among college vet-

(Concluded on page 55)

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MARCH	"Communicable Diseases"
APRIL	"Tobacco, Alcohol, Drugs"
MAY	"Hygiene of Special Organs"
JUNE	"Mental Hygiene"



by DR. HENRY F. DONN

THE battle between man and disease-producing germs has been going on since time immemorial. Evidence derived from fossil remains indicates that our prehistoric men and animals suffered from many of the diseases prevalent today.

Most of these diseases are now under direct control; others are still being carefully studied. We have come a long way from the time disease was considered closely connected with the supernatural and was fought with amulets and sacrificial rights.

Man has learned that cooperative effort is necessary in battling disease-producing germs. The work of entire communities can be ruined by the negligence of a few careless individuals. Local, state and federal legislation inflict severe penalties on those individuals or groups who fail to abide by disease-preventive measures.

It is the civic duty of the high school boy to know what his community is doing to prevent disease and what he can do to aid in that program.

As with any large problem, the realms of educative literature tends to be confusing. Insurance companies, commercial companies, local, state, and federal health agencies publish disease-prevention pamphlets by the score. In too many cases, the pamphlets are just read and discarded rather than used as a guide in the development of worthwhile health practices.

Teachers also become confused by the enormity of the available material and are at loss to determine what should or should not be included in the unit of instruction. It is during these times of indecision that a teacher should review the general purpose of the course.

This is the sixth of a series of articles on the constituents of a personal hygiene course for high school boys, by Dr. Henry F. Donn, physical education instructor and basketball coach at Weequahic High School, Newark, N. J.

Remember, this is a course of instruction in personal hygiene, not anatomy, physiology, pathology or diagnosis. The course consists of many units and there is a necessary time limitation. If care is not exercised, the teacher will find his class spending too much time on material that is irrelevant.

Our primary purpose in this unit is to familiarize the student with what HE can do to aid his body in the prevention and control of communicable diseases.

All teachers have an excellent opportunity to observe in the daily schedule of activities whether or not the student is putting into actual practice what he is being taught in this unit. These practices are spe-

cific in nature and any deviations can quickly be detected and corrected.

HABITS

1. Keep body clean by frequent warm water and soap bathing.
2. Wash hands with warm water and soap after using toilet facilities and before eating.
3. Keep fingers and any foreign objects away from ears, eyes, nose and mouth.
4. Use own toilet articles.
5. Use paper handkerchiefs and properly dispose of them.
6. Cover with a handkerchief any cough or sneeze.
7. Cooperate with authorities in observing quarantine regulations.
8. Avoid self-medication in any type of illness.
9. Obtain all recommended injections or vaccinations for the prevention of specific communicable diseases.
10. Stay at home in bed at the first sign of a cold or any other disease.
11. Practice caution in eating food or drinking liquids, the source of which is undeterminable.
12. Observe recommended first aid procedures in caring for any break in the skin.
13. Use whatever professional help is given by a private physician or community clinic in combating disease.
14. Take a suitable period of rest and convalescence following a disease of any kind.

ATTITUDES

1. Desire to obtain whatever aid science can offer in preventing communicable disease.
2. Appreciate the necessity for

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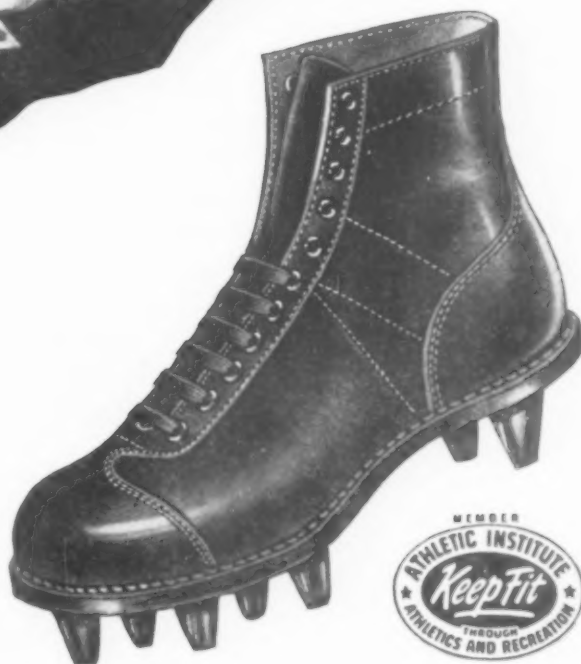
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strict adherence to any quarantine laws.

3. Desire to aid in any possible way to keep home and community sanitary.

4. Appreciate the value of preventive measures in combating communicable disease.

5. Condemn carelessness on the part of others in observing recommended health precautions in the prevention of communicable disease.

KNOWLEDGES

1. Know what communicable diseases are and how they are spread.

2. Know what personal measures

can be taken to prevent and control communicable disease.

3. Be familiar with the early symptoms of the more common communicable diseases.

4. Understand what natural protection the body possesses in the fight against disease germs.

5. Understand the new (underlined) words used in this unit.

GENERAL CONTENT MATERIAL

1. Communicable diseases are those which can be transmitted from one person to another, or by food, water, other animals, insects and infected soil. These diseases are preventable.

2. Each communicable disease is caused by a specific germ, either an animal or vegetable, so small that it cannot be seen with the naked eye. Left alone in fresh air and sunshine, most disease-germs soon die. But if placed in a warm, moist, dark atmosphere, they multiply to great numbers, thus causing unhealthfulness, sickness and even death by their body excretions.

3. Normally, the body has a balanced system of defenses against invading germs. These defenses include unbroken skin, the mucous lining of the body openings, juices of the digestive tract, secretions in the respiratory tract, tears, and cilia, which are hairlike projections which sift out foreign material trying to enter the body through the windpipe.

4. Inside the body, the blood contains the defense mechanisms. These blood germ-fighters include:

(a) *Agglutinins*—clump the germs together so that they may be destroyed more easily.

(b) *Antibodies*—destroy or help destroy germs or neutralize their poisons.

(c) *Lysins*—dissolve germs and other foreign substances.

(d) *Opsonins*—assist the white blood cells in digesting and destroying germs.

(e) *White Blood Cells*—digest and destroy germs.

5. Modern medicine provides many aids in combating disease germs. These include:

(a) *Vaccines*—weakened or dead germs which are injected into the body to stimulate the production of specific antibodies.

(b) *Antibacterial serum*—obtained from deliberately infecting horses with germs, tapping their blood, and using the horse's antibodies to fight the germs in humans.

(c) *Antitoxins*—usually produced in horses. Do not attack germs directly but neutralize their poisons.

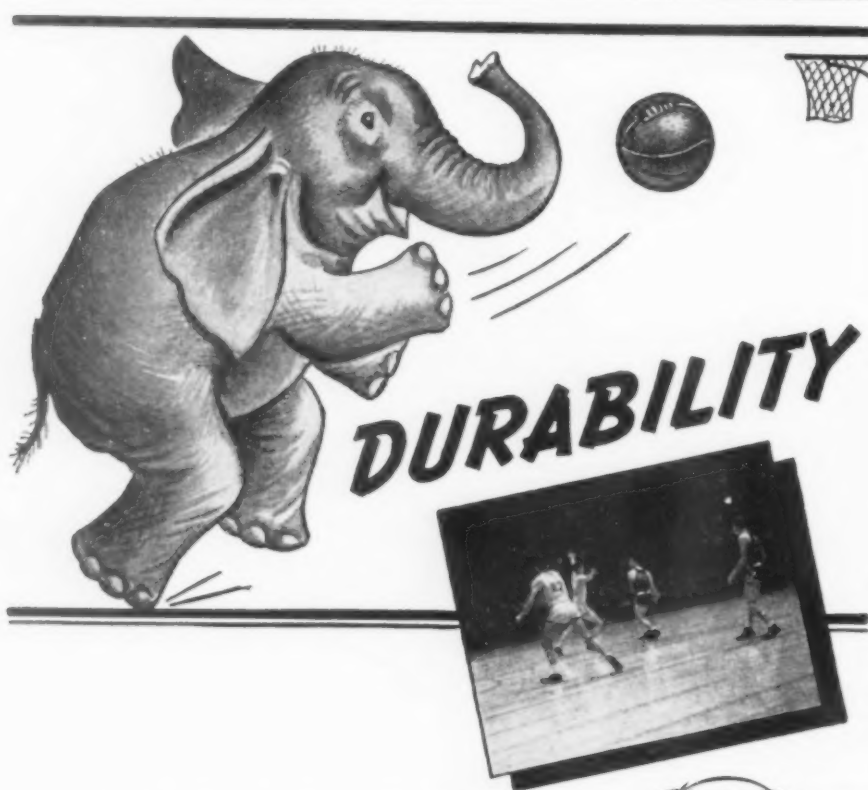
(d) *Toroid*—made by weakening poisons chemically so that they can be safely used to help the body build its own antitoxins.

(e) *Human Immune Serum*—made from the blood of those who have acquired a resistance to a specific disease.

(f) *Immune Globulin*—the important elements in Human Immune Serum, separated and used by themselves.

6. Sulfa drugs and penicillin are effective in the treatment of many germ diseases, but these drugs neither kill nor neutralize the poisons of the germs. They merely prevent germs from multiplying so that the body can fight them easier.

7. By *immunity* is meant the



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quality in a person which makes it unlikely for him to acquire a specific disease. Immunity is relative and protection is not absolute. It is dependent to some extent upon the degree of exposure and the strength of the germs encountered. Some people have natural immunity and others acquire it by means of an injection of one of the known substances in 5. Immunization is not dangerous.

RECOMMENDED HYGIENIC PRACTICES

1. It is important to obey the rules of the Board of Health with reference to the prevention and control of communicable disease.

2. Under no circumstances can a person afford to disregard the laws of health, cleanliness and sanitation in preventing the spread of disease.

3. The most important thing to do for a person who has been exposed to infection or who has symptoms of a germ-disease, is to call a doctor immediately.

4. Everyone should avail themselves of the immunizations of known value.

5. Persons should be immunized against certain diseases, especially if an epidemic of them is threatened.

6. Keep the body clean by frequent soap and warm water baths.

7. Hands should be washed before eating or handling any object, after going to the toilet, or after handling any object that is believed to harbor any unusual or heavy concentration of disease germs.

8. Keep the hands and unclean articles away from the mouth, nose, eyes, ears, and genitals.

9. Avoid close contact with others when there may be a spray from nose or mouth due to coughing, sneezing, talking or laughing.

10. Use only individual toilet articles.

11. Use only individual drinking cups and eating utensils.

12. Handle and expose human excreta in a sanitary manner.

13. At the first symptoms of disease, everything possible should be done to prevent serious heart injury.

14. After any fever, remain in bed at least one to three days after temperature is normal and then resume activities gradually.

15. Avoid people with colds; keep feet dry; wear sufficient clothes to keep comfortable; correct nose and throat defects; avoid drafts; and restore lost vitamins to the diet—are recommended means of preventing colds.

16. The person who is seriously ill with a cold needs medical advice.

17. Rest, rather than exercise, is



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CATCHING FUNDAMENTALS

Stressing the catcher as important for coordinating team play, this film presents essential catching skills of stance, footwork, signals, catching high fouls, fielding bunts and backing up first base. Educational collaborator, James Smilgoff; Technical Advisor, Mike Tresh, star catcher, Chicago White Sox, who appears in film.



SOCCER FOR GIRLS

The techniques of various kinds of traps, dribbles and passes are clearly shown in this film, demonstrating the basic skills of soccer in game-like situations. Produced at New Jersey State Teachers College at Trenton, under supervision of Miss Marjorie Fish, of that institution. Closeups and slow motion clearly show details.

3 Coaching Helps

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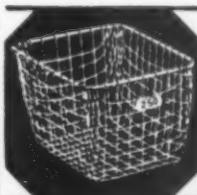
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advisable when suffering from a cold.

18. Those who have colds should be careful not to pass the infection to others through sneezing, coughing or kissing.

19. Cold vaccines cannot be recommended as a sure method of cold prevention.

20. Persons suffering from colds should be isolated.

21. The avoidance of diphtheria rests upon the shunning of persons who have the disease and vaccination against the disease with Toxoid. The Schick Test is given to make certain that immunity or protection has been established against diphtheria.

22. Vaccination is protection against smallpox. Revaccination should occur about very seventh year.

23. The Mantoux, Vollmer, or Patch-test; will reveal any tuberculous infection. Many states require schools to administer this test in the Health Service Division.

24. Early diagnosis and treatment in infantile paralysis aids materially in preventing serious paralysis. Symptoms are difficult to recognize. The seriousness of this disease and other communicable diseases emphasizes the necessity of getting professional medical advice as soon as possible. Do not attempt

to diagnose any illness yourself.

25. The U. S. Public Health Service is attempting to educate the public in venereal disease control. Most schools do not permit information of this type to be given in the classroom. Students desiring such information should be instructed to write to the U.S. Public Health Service, Washington, D. C.

26. Typhoid Fever can be prevented by inoculation.

27. In the prevention of athlete's foot, one should never go barefoot except when actually bathing or when going to bed. Severe cases should receive professional medical treatment.

28. In its early stages, cancer is curable. Consult a physician if you discover any insistent skin growth.

29. Victims of rheumatic fever should be guarded against exposure to bad weather, obtain plenty of sleep and rest and avoid any type of heavy exercise.

30. The Dick Test is used to determine immunity to scarlet fever.

SUGGESTED ACTIVITIES

1. Have a student committee present some of the local community procedures in the prevention and control of communicable disease.

2. Have a student committee report on what precautions are taken in your school to prevent the spread of communicable disease.

3. Have individual students report on a specific disease that they have had. Have them include the various steps that were taken at school and at home to successfully combat it.

4. Refer to the health records of the class as a check in finding out who was immunized, when, and for what.

5. Have a committee take care of a shelf in the school library for the purpose of maintaining for reference the hundreds of pamphlets and other literature on this subject.

6. Have a committee look up in health textbooks the meaning of the words in the following list and present them to the class: antiseptic, aseptic, bacteria, carrier, chronic, germicide, host, infection, microbe, parasite, pasteurization, pathology, quarantine and disinfectant.

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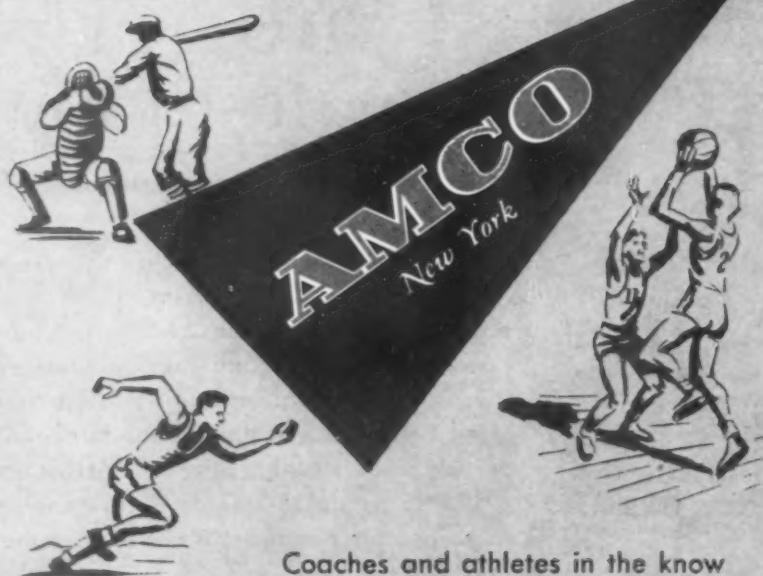
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Grid Fatalities

(Continued from page 49)

erans of World War II. This increase was reliable when the player had been in the Armed Forces for 32 or more months.

In trying to obtain the causes for these injuries, Dolan was confronted with a psychological as well as a physiological problem. As near as could be determined these injuries were being caused by: (1) a delayed reaction time, and (2) a lack of complete singleness of purpose in playing the game.

It would seem that perhaps the delayed reaction time was caused by a background of Armed Force training in endurance rather than a training in speed and agility.

It is an accepted fact that football equipment has not been available to the degree that it was prior to 1941. Certainly this has influenced the number of injuries that have occurred, especially on the high school level. Further it probably has affected to a degree the number of fatalities occurring in 1946.

During the war years equipment was not replaced as frequently as it should have been. No doubt the care of this equipment was also restricted. This is especially true of headgears. Regardless of the type, headgears need constant attention and replacement.

RECOMMENDATIONS

1. State High School Athletic Associations need to vigorously promote football safety measures among their member schools. Especially is this indicated in those states which have had frequent fatalities over the past 15 years.

2. A careful study of fourth period fatalities is necessary in light of the increasing number which are occurring during this period. The procedures for practice periods should be carefully reviewed to eliminate potential hazards such as (1) scrimmaging without adequate officiating, (2) placement of squads on field so there is complete freedom of movement, (3) equal quality of equipment used for practice and games.

3. Develop new tackling and blocking practice dummies, in order to insure better tackling and blocking techniques. The present devices are not used enough because they do not simulate playing situations.

4. Appoint at once a qualified committee to scientifically study the construction and material used in the present headgear. This study committee, it is hoped, can then recommend a headgear that will materially reduce the large number of present fatalities caused by skull fracture and cerebral hemorrhage.

(Dr. Floyd R. Eastwood is now preparing for a plunge into scientific experimentation on the modern headgear.)



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Please send all contributions to this column to Scholastic Coach, Coaches' Corner Dept., 220 East 42 St., New York 17, N. Y.

Penn State has just embarked on the noblest experiment ever undertaken in the field of education—a seminar on fly fishing. Although everything we know about Ike Walton's art could fit comfortably in the pinkie of a midget's glove, we applaud this contribution to more gracious living. It's the most significant step in the history of civilization since the invention of the athletic supporter. If more undergraduates were taught how to delude a rainbow with a bit of rooster hackle, this would be a far better and happier world.

So we hope the chair of trout snatching at Penn State prospers. We're looking forward to the time that a student will be able to sign up for instruction in Black Gnat III, Theory of Wading VI, Advanced Game Warden Evasion, and Lying for Beginners.

Mrs. Fusspot, a recreation lover from way back, drops into the school gym for a look at the modern gal at play. She trips over Penny, the Harry Haenigsen comic-strip character, who is brandishing a hockey stick.

"Ah, hockey!" gushes Mrs. F. "How fortunate you are in our modern schools. Recreation is so essential. Get all of it you can!"

"Recreation?" screams Penny. "Gee weepers, between basketball, gym and this darn hockey, I never have any time for recreation!"

Subway alumni — how we loathe 'em. Our fondest recollection of the species goes back to a Colgate-Syracuse game some years ago. A guy sitting near us, who had never been within 1,000 miles of Colgate, stood up when the alma mater was played. When asked why he stood, he explained:

"Maybe I never went to Colgate but I have always used their toothpaste."

"In a basketball game between Luck and Siren high schools of Wis-

consin," writes Ray C. Wisner, Luck's coach, "the score at halftime was 20-4. And the high-point man for each team was Everett Everson, Luck center! He scored 11 points for his own team and 2 for the opponents, the latter accidentally (I hope!) on a try for a rebound. This is the first time I've ever heard of one man being high scorer for both teams at any stage of a game."

Another horrible chapter in the history of wrong-way goals was written recently by Nettleton and Caraway high schools, of Arkansas, relates M. S. Burge, of Nettleton. "On a jump ball one of the Nettleton forwards took the tap and passed to his center, who scored—for Caraway. Thereupon Caraway took the ball under their basket, broke fast down the court, worked the ball to a forward, who put up a beauty with one hand—into the Nettleton basket! This completed a turn-about that I have never seen duplicated on a basketball court."

One thing confuses us about this story. The first goal was scored for

Caraway. That means it was dropped into Nettleton's defensive basket. Didn't that entitle Nettleton to put the ball into play from their end line? Mr. Burge says Caraway took possession. What gives?

No, no, a thousand and four times, no—but it's true—a basketball team that sings for the crowd between halves! The dribbling Sinatras hail from Fremont (Mich.) High, and they're supposed to be terrific. Coach Lawrence Gotschall tells us his boys hold the crowds spellbound with their intermission warbling.

Known as the Singing Packers, the quartet is composed of Bill Kempf, Steve Kolk, Marv Hooker, and Dick Nisbet. Oh, yes, one of the team doesn't sing. Wassa matter? Anti-social or sumptin?

We love every one of the 21 members of the Pan American Union. And if it will help the Good Neighbor policy, we're glad to publish the latest communique from the P. A. Union, brightly titled *Basketball Wins Large Latin American Following*. It seems the hoop game made its way south in 1896 when a missionary stationed in Sao Paulo, Brazil, taught it to the students at McKenzie College. He had several good teams organized and was doing fine until he accidentally left a newspaper on his desk which prominently displayed the picture of a girls' basketball team in the U. S.

His Brasileiros, taking note of the picture, promptly gave up the game as "one meant for girls," and that objection has persisted in some sections ever since.

There's a lot of amusing writing in the introduction to Bert Dunne's book, *Play Ball, Son!* a review of which appears on page 44. A contribution by Joe Cronin, this first chapter tells of the time Dunne cornered Moe Berg, easily baseball's most educated player, and started a debate on the science of batting.

For five straight hours, Bert and Moe argued. It was a brilliant duel. The talk was so far over the head of





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one of the Boston sluggers that he left the room grumbling. "Hitting ain't talk. It's laying the wood on the old apple."

Bert's premise was that the science of hitting could be taught. Moe denied this. Bert called upon his knowledge of anatomy, physics, mathematics, philosophy, public speaking and Irish blarney to plead his case. Moe countered with metaphysics, French, Arabic, trigonometry, archeology, and Jewish blarney to plead his case.

Cronin was elected judge. At two in the morning, he threw up his hands in despair. The silver-tongued orators left his room and walked the streets until five in the morning. Nobody yet knows who won the argument.

Cronin pays tribute to Dunne's beguiling histrionics in another tale going back to Dunne's baseball days at Notre Dame. Bert ran a "hitting laboratory" in his room. His students broke many an electric light globe until the authorities stepped in and announced they had provided baseball fields for such experimental work.

Knute Rockne was not particularly interested in baseball. But Bert kept hammering at him that Notre Dame players should have the last word in equipment. Rockne held out as long as he could. But Bert finally talked him into providing major league uniforms, featherweight spikes (at \$18.50 per pair), bat bags, jackets and three personally selected bats for each player!

When we elevated Dell Tyler, Missoula (Mont.) High grid captain, into our hall of fame for playing on four straight state-champ teams (see January issue), we asked if that was a high school record.

Coach P. B. "Lit" Durham, of Olympia High in Columbia, S. C., promptly popped up with *three boys* who have won four gold awards in *one year*. The boys are Larry Gates, Billy Elkins and Roy Davis. All of them won awards for playing on state championship teams in basketball and baseball, and for playing on a champ football team that won two Bowl games in one season—the Miami Beach bowl game on December 7 and the Carolinas Bowl on January 1.

From Penns Grove, N. J., coach Anthony T. Leone, of Regional High, puts in a hall-of-fame bid which he doubts can be matched anywhere. His candidate is Bill Lashovar, of West Fairmont (W. Va.) High. Bill's record is incredible. He has made all-state in football for four years, and all-state in basketball and baseball for three years. What's more, he's a cinch to repeat this year in the latter two sports, which will give him a perfect record of four straight all-state nominations in three major sports! Whew!

Coach Leone tells us all this can be checked with Bill's coach, Buzz Dawson. Needless to say, we've already written. Not to check up, but to get more dope on the wonder boy.

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"Let's have another football rule change, please," facetiously writes H. L. Harrison, athletic director of Oroville (Cal.) High. It seems in a game between Oroville and Orland, Coach Joe Felipe, of Oroville, chagrined at the failure of his power drives up the middle, sent in a sub for his center, Bobby George.

Bobby, an ordinarily placid citizen, came trotting off the field with fire in his eye. This was so unusual that Coach Felipe asked him what was wrong.

"They don't play fair, Coach!" yelled Bobby. "That big guard of theirs keeps standing up in the center of the line. I get contact on him. But when I start driving him out, he grabs me by the seat of my pants and lifts me off the ground. I can't get traction and can't move him. That's no fair, is it, Coach?"

Wanna lifetime job? Just get connected with the Crouse-Hinds flood-lighting people. While browsing through their booklet, *Fifty Years*, commemorating the Company's 50th birthday, we came across an interesting chapter showing the years of service of each employee. We got out our adding machine and started counting noses. We discovered that Crouse-Hinds has 197 people with over 25 years of service in its employ!

"Here Below"

(Continued from page 5)

Ganslen said—and it's on record: "I'd like to do some research on vaulting because I see no reason why, based on the information available, man can't go 15 ft. 6 in."

Several years later Warmerdam made Ganslen look like a Nostradamus.

At this point we asked Ganslen whether his ten years of researching had led him into any new conclusions regarding man's ultimate in the vault.

Dick whipped out a pen, made a couple of rapid calculations, recapped the pen, and looked up. "I predict," he said solemnly, "that someone some day will vault 16 ft. 3 in. What's more, the 16-ft. vaulter of the future won't have to be exceptionally tall or strong.

"It's just a matter of perfecting the proper mechanics: (1) a good fast run; (2) a nicely balanced takeoff; and (3) a good hard vertical pull-up combined with a fast turn. The push-up will take care of itself."

"Why," continued Ganslen, "if Warmerdam had had as effective a push-up as Sefton with his (Warmerdam's) hand grip, he would easily have cleared 16 ft.

(Continued on page 60)



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"Warmerdam had the perfect temperament. Nothing ever bothered him. During a meet he would often scoot around with a camera, taking pictures. At the last minute he would return to the vaulting pit and take his try—cold. But Warmerdam was one in a million."

On the subject of ultimates Ganslen told us he expects our broad jumpers to go over 28 feet some day. (The current world's record is 26 ft. 8 1/4 in.) Ganslen himself once saw Jesse Owens do 27-3 and 27-4 on successive jumps in practice!

WHILE Ganslen was decoding a couple of complicated formulas for us, we did our best to look intelligent. But we must have failed. For he suddenly looked up and smiled.

"Does all this make sense to you?"

We told him a lot of it was way over our ears and that we wondered what practical application the coach could make of it.

He thought that one over for a while "It's this way," he explained. "I know some of these formulas are beyond the average coach's comprehension. But if they do nothing else, they will inspire a respect for the pole vault"

We could see that all right. Ganslen continued: "These physio-mechanical studies play a vital role in the improvement of sports skills.

"For instance, how do you account for the performances of the Japs in swimming and track? Physically they're very inferior to the other races. But when it comes to scientific study, they're tough to beat. They'll study a skill, figure out the best economical way to do it, then work on it until they perfect it. That's how Sueho Ohe, a 5 ft. 9 in., 136-pounder, became a 14-4 vaulter.

"Remember Yoshioka, the Japs' Olympic sprinter? He probably was the fastest man off the mark that ever lived. He couldn't be beaten up to 60 yards. After that the big boys ran him down.

"Well, I once walked down the track after one of his races and I failed to see a single spike scratch! He put his feet down and picked 'em out as clean as a whistle. Talk about bounce!

"The same thing holds true of the Swedish runners. They just seem to float along, loose and lazy as a daisy. There's no sweat, no strain, no chugging. It's just a matter of the proper body mechanics."

The success of the Swedish runners has given Ganslen a mission in life. He wants to go to Sweden. He wants to do the same anatomy-

physiology-mechanical research on their runners as he has on the pole vaulters. Soon as he can wrangle a research fellowship he'll be off.

Meanwhile we've secured first rights to the 45 formulas and 600 pages of researching he's sure to bring back.

YOU can't get away with a thing in this editing business. Every rule interpretation, every picture, every caption—must be just so.

One slip and you're a dead duck. A dozen letters will riddle you with buck shot. Sometimes we think our readers go over the magazine with microscopes in one hand and revolvers in the other.

Take our January cover, for instance. Remember those 15 building and equipment items? Could you think of anything less controversial? Yet one of our eagle-eyed readers spotted an apparent fumble.



It had to do with the picture of the stop-watch, shown above. "Why is the thumb operating the timer?" writes A. G. Peterson, superintendent at Plainview, Neb. "Isn't it true that the index finger is preferred? Hasn't the index finger a faster reflex action than the thumb?"

"The picture aroused considerable interest in our section and we would like to hear from you regarding the proper way to hold a stop-watch."

Who said the life of an editor is just a bed of rose bowls?

FEELING that anybody who scrutinizes our covers so carefully deserves a lot of attention, we dropped everything we were doing and started an investigation.

Our first stop was the manufacturer of the timer in question. He told us that three types of stop-watches are in general use. One type features just one button, which does all the work.

A second type has a slide catch on the side and a regular button on top. The slide catch stops the second hand, while the button brings the hand back to 0.

This is the type of watch we showed. Mr. Peterson questioned the use of the thumb in the timing.

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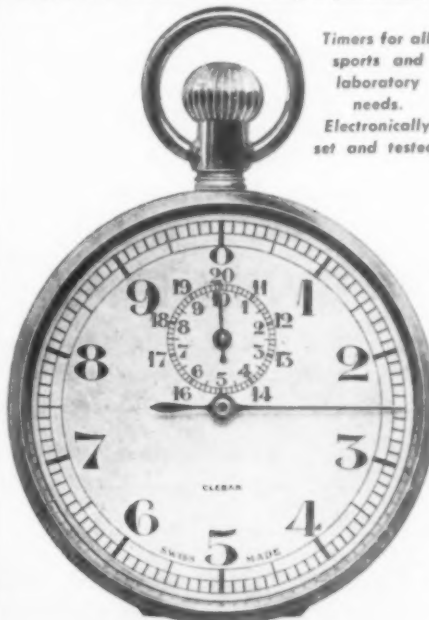
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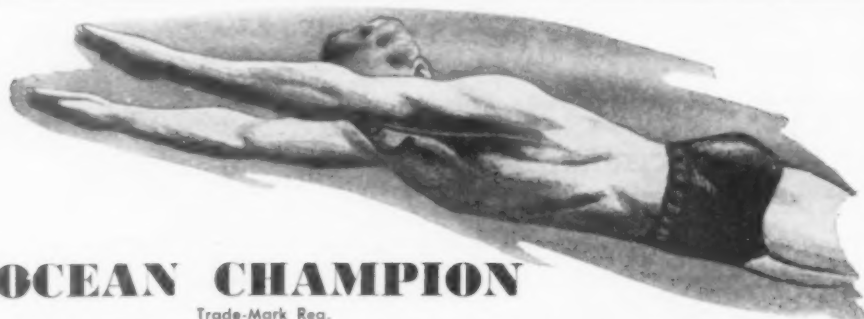
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Actually all the thumb is doing is pushing the second hand back to 0. Which is no mistake.

If you look at the picture closely, you'll see that the index finger is on the slide catch at the side. It has just finished stopping the second hand.

That's the part that is wrong. In this type of timer, the thumb should do the actual timing. It is in better position than the index finger to do so and can work the slide catch faster.

So there you are, Mr. Peterson. The index finger is operating the watch, but it is wrong!

But don't go away, sir. You're still right! (Whew!) Which brings us to the third type of timer—which has the regular button on top and another button on the side for the actual timing.

And with this type of watch, the index finger is definitely preferred as the second-hand stopper.

WE called Dan Ferris, the one-man information bureau of the A.A.U., on this matter, and he confirmed Mr. Peterson's theory on the faster reflex action of the index finger. So did E. A. Thomas, the National Federation member of the Track and Field Rules Committee.

Do you know that R. J. Swackhamer, the author of that A-1 lighting article in the January issue, is the General Electric engineer who designed the Yankee Stadium "floods"? What's more, General Electric prepared that article specially for us.

Specialized Exercises

(Continued from page 10)

sume starting position by balancing on neck with arms supporting hips.

(2) From this position, go through stride motion in air.

Pull-ups and push-ups are also beneficial to the sprinter in developing the torso. In his pull-ups, the athlete should keep the back of his hands turned toward the body.

POLE VAULTING

The exercises for the pole vault naturally involve the strengthening of the arms and shoulder girdle, as well as of the legs and trunk. *Simulated vaulting*

Using a heavy rope or bamboo pole suspended from ceiling, practice the technique of vaulting as follows:

(1) Grasp rope as you would grasp pole in a regular vault.

(2) If right-footed, simulate

takeoff with left foot by swinging right knee up and forward. If left-footed, reverse position of legs.

(3) Then kick both feet straight up into air alongside rope, arms remaining straight.

(4) At same time, turn body to face imaginary runway.

Rope climbing

(1) A great aid in developing arm and shoulder muscles.

Pull-ups and walking on hands are excellent for all-around development of body.

MIDDLE DISTANCE RUNNING

The exercises for middle-distance runners resemble somewhat those for sprinters. Exercises which stretch and strengthen the hip and abdominal muscles, as well as the legs, are stressed.

Leg flexing

(1) Lie flat on back and slowly raise feet over head, keeping legs straight and toes pointed. This stretches thigh and leg muscles and develops abdominal and back muscles.

Ankle exercise

(1) Point toes down, then slowly bring them up.

Trunk raising

(1) Lie flat on back and slowly raise body to sitting position, keeping legs straight.

The ground hurdling exercise of the hurdler, which has already been explained, is an excellent exercise for stretching the legs.

HIGH JUMPING

The high jumping exercises stress the development of spring and flexibility in the legs.

High kicking

(1) Kick leg high into air and extend opposite hand.

Upside down split

(1) Take the position for bicycling, balancing on shoulders with body supported by hands.

(2) From this position, bring left leg down until it touches ground behind head. At same time, stretch right leg. Then reverse process with right leg touching ground and left leg stretching.

Reversing feet

(1) Start from sprinter's crouch with hands on ground and one leg about 18 inches ahead of other.

(2) Spring into air and reverse position of feet.

Bounding

(1) Bound up and down, first on one foot, then on other.

DISTANCE RUNNING

Emphasis in the distance running

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March, 1947

exercises is placed on stretching and strengthening the legs.

High kicking

(1) Kick leg high into air as described in exercises for high jumper.

Trunk raising and leg flexing

(1) Same as exercises used by middle distance runner.

Pull-ups and push-ups

(1) Self-explanatory.

WEIGHTS

The weight man requires exercises which strengthen the legs, arms and trunk, since all these members play an important role in his event.

Stretching leg muscles

(1) Take a stance with legs spread wide apart.

(2) From this position, crouch down toward right side, keeping left leg straight out to side. Then repeat exercise to left side.

Hip action

(1) Exercise for shot-putter. Assume putting crouch, then straighten right leg on which weight is resting. This sends power up thigh to shoulder and arm.

Knee bends and front bends

(1) These torso-stretching exercises have been explained under broad jumping.

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(1) Squeezing a small rubber ball helps develop the muscles of hand and wrist.

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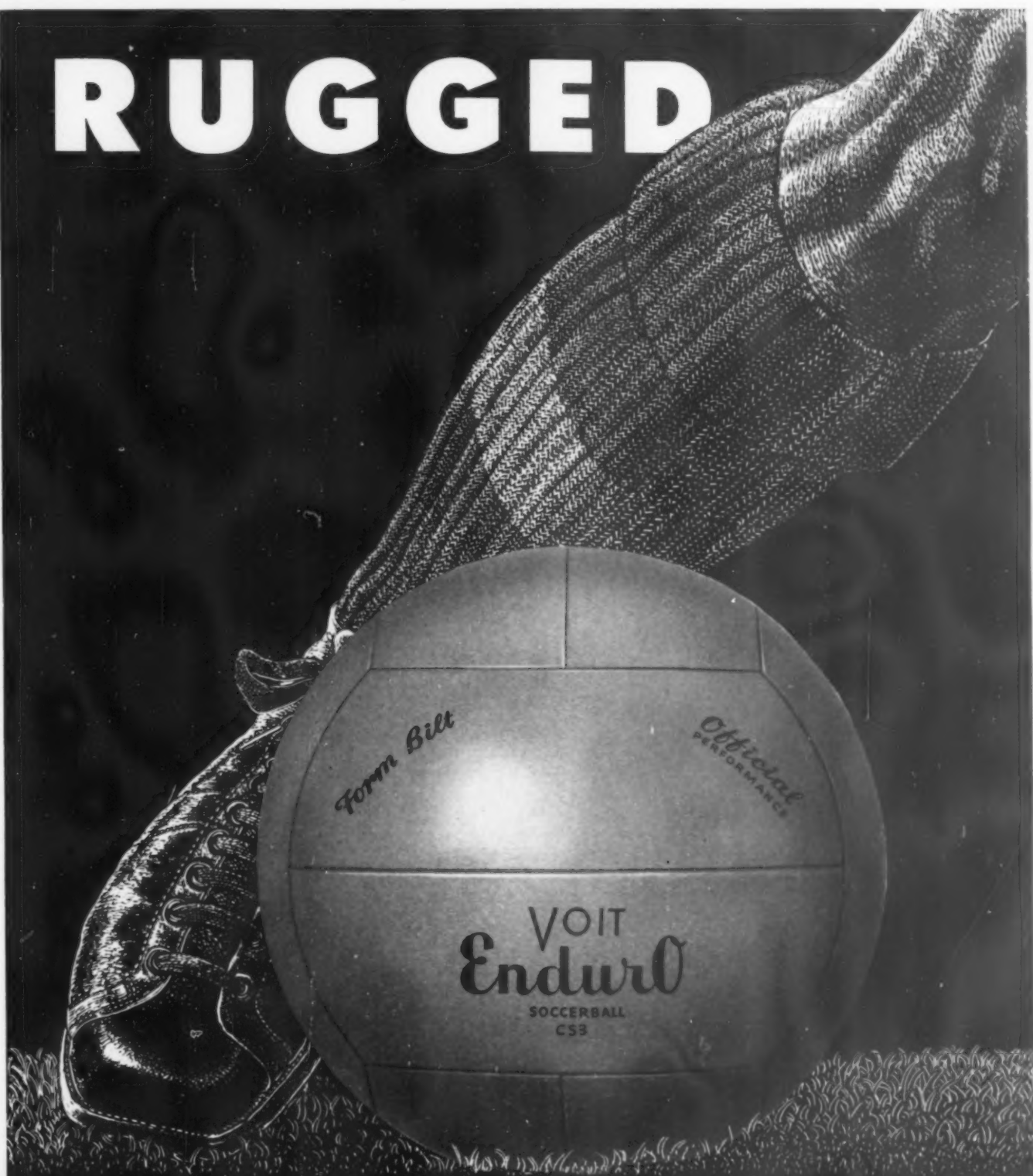
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